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## ORIGINAL ARTICLES

### A "FIELD RESPIRATION APPARATUS" FOR A MEDICAL AND PHYSIOLOGICAL SURVEY OF RACIAL METABOLISM

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PERHAPS the best general index of vital activity is the basal metabolism. In the diagnosis and treatment of endocrine disturbances it has long been conceded that basal metabolism determinations are helpful and, although the recognition has been slow, increasing attention is now being given to the utility of such tests as an index of the general level of vital activity. In a recent survey<sup>1</sup> of the metabolism of healthy young women at Mount Holyoke College, South Hadley, Massachusetts, and at Teachers College, New York City, it was found that the Japanese and Chinese women students had, in general, a perceptibly lower basal metabolism than did their American college mates, although they were living in exactly the same environment as the American students, ate at the same tables, and in every way were seemingly adjusted to the student life typical of an American college for women. The natural inference was that this indicated a true racial difference in metabolism, a finding in full conformity with the belief of Earle<sup>2</sup> and substantiated by Takahira<sup>3</sup>. The attention of anthropologists was immediately challenged by these findings, and a general project for studying the metabolism of various races has been developing at the Nutrition Laboratory during the past year. The difficulties of properly assessing the effects of climate, environment, nutritive condition, and possibly season, are fully recognized. But the undertaking of this racial study has seemed justifiable because the influence of the factor of race is by no means settled, as evidenced, for example, by the controversy between Eijkmann and de Almeida with regard to the metabolism of the negro and the white man in the Tropics<sup>4</sup>.

To measure the metabolism of remote races it is not practicable to transport any of the conventional forms of respiration apparatus, certainly not the large gasometers or the delicate gas-analysis apparatus such as the Zuntz-Gepert, the Tissot, or the various modern modifications of the Haldane apparatus. Even many of

the so-called "closed circuit" portable apparatus, such as that of Krogh and the various forms developed at the Nutrition Laboratory, are not sufficiently portable to be actually of use in field work. The student respiration apparatus described by Benedict and Benedict in 1923<sup>5</sup> has proved far more accurate than it was at first thought would be the case. Indeed, although it was indicated that further simplifications of the apparatus might be feasible, it was not realized that such simplifications would be permanently practical for what one might call "field metabolism research." But a smaller form of the student apparatus has been successfully developed, which, like its predecessor, does away with the necessity for gas analysis of any kind, for weighing, or for the use of a difficultly transportable gasometer, even of small size, and which permits the measurement of the oxygen consumption of an individual with great accuracy.

#### PRINCIPLE OF THE APPARATUS

The subject respire into a closed circuit of highly oxygenated air by means of a mouth-piece, the nose being closed with a clip. The expired air, rich in carbon dioxide, passes into one side of a can, which contains soda-lime and which is covered with a light-weight rubber bathing cap to provide for expansion and contraction of the air without resistance. The carbon dioxide is absorbed by the soda-lime, and the air thus returns to the mouth, free from carbon dioxide. Two rubber valves allow the air to pass continuously in one direction, from the can to the mouth and from the mouth back to the can. In the process of metabolism the total volume of air in the closed respiratory system is gradually decreased by the absorption of oxygen. The object is to measure quantitatively this decrease in volume by introducing into the closed circuit a metered volume of oxygen, to compensate exactly for the amount of oxygen withdrawn. An index of constancy in the volume of

the apparatus is therefore necessary. The light-weight rubber bathing cap, which offers no resistance to respiration, slowly sinks as the oxygen is consumed. If oxygen is introduced quantitatively by some means so as to elevate the bathing cap at the end of the experiment back to the point at which it was at the beginning of the experiment, the measurement of the oxygen thus introduced is a measure of the oxygen consumed by the subject.

#### DETAILS OF THE APPARATUS\*

The underlying principle of the apparatus requires the connection of the respiratory tract of the subject with a closed system consisting of (1) a mouthpiece connecting with two simple inspiratory and expiratory valves, (2) a recipient containing soda-lime, covered with a light-weight, pure rubber bathing cap to insure free respiratory movements, and (3) a simple pump for measuring the decrease in volume of the air in the system due to the abstraction of oxygen in the respiratory tract. A general view of the apparatus is given in figure 1.

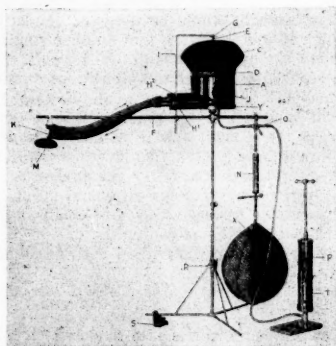


FIGURE 1

#### A Field Respiration Apparatus

The reagent can, A, is approximately four-fifths filled with soda-lime and covered with the rubber bathing cap, C, attached by rubber band, D. The reagent can rests on an aluminum platen, Y, and is supported on an ordinary music rack, R, with side arm, F, to support metal mouthpiece holder, K, and the rubber mouthpiece, M. The air passes to and from the subject through the rubber tubes leading from the mouthpiece and through Sudd valves in the metal housings, H<sub>1</sub> and H<sub>2</sub>. An index rod, I, with index plate, G, serves to adjust the height of expansion of the rubber cap, C, with index button, E. Oxygen is drawn into the pump, P, from the rubber bag, X, through the moistening device, N, by proper turning of 3-way valve, O, and is introduced into the reagent can through the petcock, J, on the intake side of the can. T is a thermometer on the pump, and S is a noseclip.

\*The entire apparatus and any accessory parts may be obtained from W. E. Collins, 555 Huntington Avenue, Boston, Massachusetts.

#### REAGENT CAN AND SODA-LIME

The reagent container, A (fig. 1), is a seamless, spun-brass can, 127 mm. high and 153 mm. in internal diameter. A light-weight pure rubber bathing cap, C, is stretched over the top and held firmly in place by a heavy rubber band. The details are shown in figure 2. The can is divided into two parts by the partition B, and is filled with soda-lime up to the top of this partition. Along the bottom of the can is a pipe, L, which passes through the walls of the can and the partition B. A plug closes the pipe in the middle, at the point where it passes through the partition. There are openings on the under-

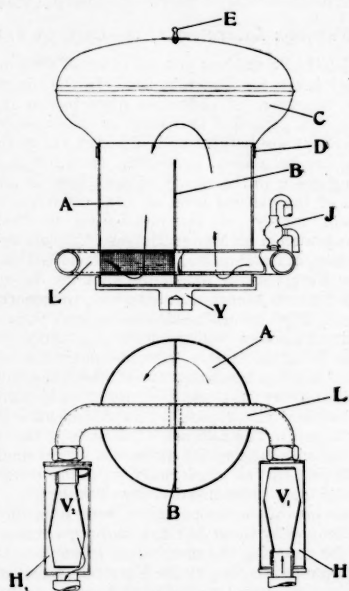


FIGURE 2

#### Details of Reagent Can and Valves

A, reagent can which, when in use, is filled with soda-lime up to the top of partition, B. C, rubber bathing cap. D, rubber band. E, index button. J, petcock through which oxygen is introduced from pump. L, pipe passing along bottom of can with holes (protected by wire gauze) along the underneath part for the entrance and exit of air; this pipe is closed by a plug at the point where it passes through the partition, B. Y, aluminum platen upon which reagent can, A, rests. H<sub>1</sub> and H<sub>2</sub>, brass housings for Sudd valves, V<sub>1</sub> and V<sub>2</sub>.

neath part of this pipe for the entrance and exit of the circulating air, and these openings are covered with wire gauze to prevent particles of soda-lime from entering. The expired air enters

the pipe on one side of the can, escapes through the holes and wire gauze, passes up through the soda-lime, over the partition, and down on the other side. Hence the soda-lime in the first compartment becomes exhausted, while that in the other compartment is still efficient. By rejecting the exhausted soda-lime and transferring the soda-lime in the second compartment into the first compartment and refilling the second compartment with new soda-lime, the highest degree of efficiency is secured.

The can holds about 1400 grams of soda-lime. Theoretically any good soda-lime can be used, but we have found highly advantageous a patented soda-lime with a high moisture and a low alkali content.\* If at the start of an experiment there is a fresh charge in both compartments, the soda-lime should last for at least 30 periods, each of about 10 minutes or each long enough to permit the introduction of 6 pumpfuls of oxygen (about 2.2 liters). (See page 1170.) By this time the soda-lime in the first compartment will have become exhausted and probably some carbon dioxide will have been absorbed in the second compartment. The rubber bathing cap, C, is then taken off, the rubber band, D (fig. 1), having first been carefully removed. A semi-circular piece of sheet copper is placed over the exit side of the can, and all the soda-lime in the intake side of the can is thrown away. The soda-lime in the exit side is then poured out and transferred to the intake side, and a fresh supply of soda-lime is put into the exit side. By this procedure the maximum use of the soda-lime is obtained.

A gross test of the efficiency of the reagent is the heat developed in the can during an experiment. When there is no heat on the intake side and considerable heat on the exit side, this indicates that the soda-lime in the intake side is exhausted. This might necessitate changing the soda-lime even before the completion of 30 periods, but in general it will probably be safe to make 30 periods of about 10 minutes each (each period representing the introduction of 6 pumpfuls of oxygen) before the can is filled with a fresh charge of soda-lime. The heat developed will naturally depend in large part upon the composition of the soda-lime, but this general rule holds true for practically all soda-limes.

\*The simplest method of making soda-lime with which we are familiar is that long used in the Nutrition Laboratory, and is as follows:

750 grams of unslaked lime and 750 grams of crude commercial sodium hydroxide are each weighed separately. The caustic soda is dissolved in 450 cc. of water in an iron pot over a gas flame. When this is thoroughly dissolved the lime, which has been previously pulverized, is carefully but rapidly added to the pot, the flame turned down, and the whole mass thoroughly stirred with a long handled iron rod until the almost explosive slaking is completed. The finished material should be lumpy and slightly moist to the touch, but not so moist as to be sticky nor so dry as to be powdered easily. After cooling, the material is broken into sizes suitable for use. We have found for this purpose that material which passes through a sieve with a mesh of 4 mm. is best. The patented soda-lime is very efficient, but much more expensive than material prepared as here described.

#### RUBBER BATHING CAP, INDEX BUTTON, AND INDEX PLATE

To cover the soda-lime recipient, keep the air well confined, and yet provide a light, flexible cover to rise and fall with each respiration and produce no resistance to breathing, a rubber bathing cap has been found admirable. This, however, is decidedly the part of the equipment which most rapidly deteriorates. If properly protected and if mechanical injury is avoided, these caps can be used a full year, especially if covered, when not in use, by a black cloth. An index button, E (figs. 1 and 2), is attached to the center top of the bathing cap by a simple lock nut and washer inside the cap. The bathing cap is held in place on the can by a stout rubber band, D (figs. 1 and 2). In an emergency a rubber band can be cut from a piece of 4- or 5-inch automobile inner tubing.

The soda-lime recipient rests on a supporting stand, R (fig. 1), with side arm, F. Clamped to this side arm, F, is a vertical, light-weight rod, I, with a right-angle bend at the top and a plate, G, at the end. This is the index plate, and the button, E, on the rubber diaphragm is raised to touch this index plate at the beginning and end of each experiment. (See page 1166.)

#### VALVES AND VALVE HOUSINGS

Attached directly to the pipes on the reagent can are the valve housings, H<sub>1</sub> and H<sub>2</sub> (figs. 1 and 2) which, for the sake of rigidity, are made of brass. The two parts of each valve housing are screwed together with a leather washer, to make the closure absolutely tight, and soft rubber gaskets are inserted in the couplings to which the housings are attached, in order to make the closure tight at these points also. The valves, V<sub>1</sub> and V<sub>2</sub> (fig. 2), are rubber valves similar to the "Sadd valve" designed by Major J. A. Sadd of the English Army for use in the war gas mask. These valves are so adjusted in their housings as to allow the air in the closed system to move only in one direction. Thus, the air from the lungs passes through the valve V<sub>1</sub> and into the compartment of the reagent can with the petcock J attached to it, passes up through the soda-lime in this compartment and down through the soda-lime in the exit compartment, and returns to the mouth of the subject through the valve V<sub>2</sub>.

#### MOUTHPIECE

On the ends of the valve housings are two lengths of soft rubber tubing, each 40 cm. in length, with an external diameter of 23 mm. and an internal diameter of 17 mm. These lengths of rubber tubing lead to the nickel-plated brass tubes, e and i, in the mouthpiece holder, K. (See figs. 1 and 3). Over a ridge at the end of the mouthpiece holder, K, is attached a rubber flange, M, which rests between

the teeth and lips of the subject. The metal mouthpiece holder, K, is suspended from the supporting arm, F (which reaches out over the bed or couch), by means of a brass clip, which permits a certain degree of flexibility in adjusting the rubber flange, M, comfortably in the mouth. (See fig. 1). To secure greater flexibility a piece of string or tape may be run through the brass clip and tied to the supporting arm, F. The details of the mouthpiece holder, K, are shown in figure 3. The tube, K, is of thin-walled brass, 95 mm. long and 19 mm. in internal diameter.

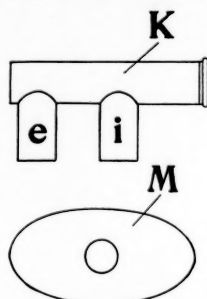


FIGURE 3

*Metal Mouthpiece Holder and Rubber Mouthpiece*

The rubber mouthpiece, M, is attached over the ridge at the end of the metal mouthpiece holder, K. The air expired by the subject escapes through the tube e, and passes through rubber tubing into the reagent can. Carbon-dioxide free, oxygen-rich air from the closed system enters the tube i and passes directly to the mouth of the subject.

The rubber mouthpiece, M, is of the simplest form, being commonly prepared from rejected automobile inner tubes (4-inch tubes or larger). It is cut from rubber 2 mm. thick and is oval in form, approximately 85 mm. long by 45 mm. wide; a hole 15 mm. in diameter is punched in the center. (See fig. 3.) This can then be slipped over a little ridge on the end of the brass tube, K, and a tight closure is secured. The mouthpieces cut from automobile tubing can be cleaned quickly and are cheap enough so that one can afford to throw them away soon, if necessary. They are strongly to be recommended. The two smaller projections commonly found on mouthpieces and frequently held between the teeth (of value when severe work is being done and disarrangement of the mouthpiece might take place) are not used, as they have been found to be unnecessary in rest experiments.

**NOSECLIP**

Any noseclip may be used. Of the many forms of noseclip now on the market, practically

all of which have been tested at the Nutrition Laboratory and, indeed, found serviceable, none has given such universal satisfaction as the Siebe-Gorman noseclip. (See fig. 4.) The final closure of the nose is best made at the end of a normal expiration. Pieces of soft tissue paper may be placed between the nose and the felt pieces on the noseclip, for sanitary precautions.



FIGURE 4

*Noseclip*

**PUMP**

For metering the air or oxygen introduced into the system, nothing equals a plunger pump in simplicity and accuracy. For the original student respiration apparatus a slight modification of an automobile grease pump was used. For field work it seems best to employ a pump having a somewhat stouter brass wall, which can not be easily dented. The barrel of the pump is made from seamless drawn brass tubing. The pump (see figs. 1 and 5) is mounted vertically upon a substantial but light-weight aluminum plate (p, fig. 6.), which can be placed upon the floor. When the piston is raised, the weight of the foot will hold the pump down.

The closure of the piston in this pump is of a new type. (See fig. 6.) The leather washer, w, on the piston naturally wears slightly with use. To insure that the friction between the piston and the wall of the cylinder, c, is always perfect (i. e., gas-tight), a leather washer, w, has been especially cut or bevelled and soaked in a mixture of oil and vaseline. By an ingenious device of W. E. Collins this leather washer can be tightened in such a way that so much pressure can be brought against the walls of the cylinder as to make it actually impossible to move the piston. This tightening effect is secured by drawing together the two parts of the piston. A long rod, a, at the end of which is firmly attached a bevelled brass plate, b, passes through a pipe, d, also fitted with a bevelled brass plate, e. The leather washer, w, rests between these plates. The handle at the top of the piston is screwed onto the end of the rod, a, and thus one can draw these two bevelled metallic plates, e and b, together and squeeze the washer, w, out against the sides of the pump barrel as tightly as desired. This is the important part of the

design. The piston should not, of course, be so tight as to cause excessive friction, and yet it should be tight enough to prevent leakage.

In the handle of the pump there is a steel set screw, with a bit of metal curved on the end to fit the threads on the rod, a. This set screw can be tightened and thus hold the handle securely in position on rod a. This is the ingenious method of W. E. Collins for securing tightness of fitting. Our experience thus far is that when the pump is once adjusted, it is a long time

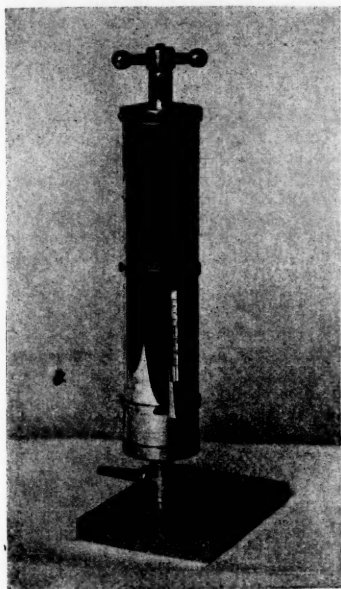


FIGURE 5

*Pump for Metering the Oxygen Consumption*

before readjustment is necessary, but the readjustment is always easily possible with a small screw-driver.

The pump has a constant length of stroke of 200 mm. To insure constancy in length of stroke, the handle comes in contact with the top of the pump before the piston or plunger reaches the bottom, so that the contact is metal to metal. When the piston is raised, a small collar, f, encircling the piston rod just above the brass plates, e and b, and the leather washer, w, strikes the inside of the top of the pump and thus prevents the leather washer from coming in contact with the pump cap.

#### AIR MOISTENER

The oxygen consumed from the closed circuit is replaced with oxygen metered through the pump. If the oxygen drawn into the pump, P, passes first through a wide-mouthed tube, N (see fig. 1), containing moistened bits of rubber

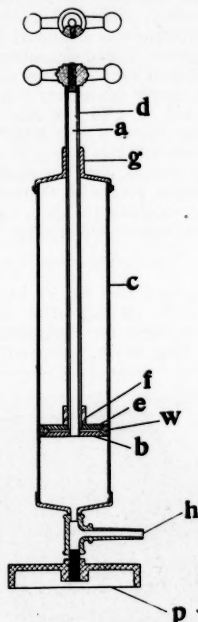


FIGURE 6

*Details of Piston in Pump*

The piston consists of the pipe, d, with internal rod, a, attached to the ends of which are the bevelled brass plates, e and b, respectively. The leather washer, w, is squeezed out between these brass plates against the wall of the cylinder, c, by means of a screw in the handle at the top of the piston. The length of stroke of the piston rod is determined by the metal collar, f, at the end of the pipe, d, and the metal projection, g, on the cap of the pump. The pump is mounted vertically on the aluminum plate, p. The tube, h, connects with the rubber bag (basketball bladder), X, and the reagent container, A, through proper turning of the valve, O (fig. 1).

sponge, filter paper, or absorbent cotton, it becomes saturated with water vapor and in the computation of the results the volume of air discharged into the system through the pump may be considered always on the basis of air saturated at the temperature of the pump. The air moistener consists of a brass tube, 12.5 cm. long and 20 mm. in internal diameter.

## SUPPORTING STAND

Because of its simplicity and lightness in weight a music rack, R (fig. 1), with an aluminum platen, Y, at the top, is used to support the apparatus. A brass rod inside the music stand can be raised and lowered in telescope fashion, thus allowing any vertical adjustment of the stand. On the vertical rod a cross is attached, to which is screwed a side arm, F, of brass pipe, which acts as a support for the metal mouthpiece holder, K, and the rubber tubes leading to the reagent can. To this arm is also attached, by a simple laboratory clamp, the vertical index rod, I. To the side arm, F, on the supporting stand is also attached a 3-way valve, O, connecting the pump, P, through one port with the petcock, J, of the reagent can, and through a second port with the moistener device, N, which saturates the air or oxygen sucked into the pump from the rubber bag, X.

## CARRYING CASE

A carrying case (see fig. 7) has been made which permits the packing of the apparatus in small, compact form for transportation. This case is 67 cm. long, 25 cm. wide, and 27 cm. deep.

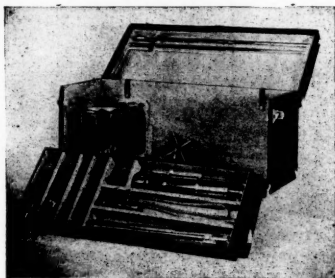


FIGURE 7

*Carrying Case with Field Respiration Apparatus  
Packed Inside*

The valve housings, noseclip, pump, metal mouthpiece holder, rubber tubing, and supporting stand are shown packed in the tray of the case. The reagent can, base of the pump, and 3-way valve are shown in the case, the unpacked portion being for the soda-lime can, record books, etc. To the cover of the case are attached the index arm and side arm supports.

## ASSEMBLING OF THE APPARATUS

The aluminum platen is attached to the top of the supporting stand, and the soda-lime container is rested upon this. The extension arm for the support of the mouthpiece holder is then screwed into its cross. The metal valve housings are attached to the reagent can, each with its respective gasket, and the rubber tubes are connected to the mouthpiece holder. The rubber

tube leading from the exit valve,  $V_2$  (fig. 2), is always attached to the opening (i, fig. 3) in the mouthpiece holder nearest the rubber mouthpiece, so that the carbon-dioxide free air enters the mouthpiece holder at the point nearest the subject's mouth. A stout rubber band, used to insure tight closure of the bathing cap, is snapped around the soda-lime can and pushed down from the rim for several centimeters. The bathing cap is then carefully applied, approximately adjusted in position, and the stout rubber band is carefully raised in order to make a complete closure between the edge of the bathing cap and the metal of the can. The vertical rod holding the index plate is clamped to the extension rod and the approximate position of the bathing cap is located. The air moistener is attached to the 3-way cock on the extension rod, near the cross, by means of rubber tubing.

The degree of convexity of the bathing cap at the beginning and end of the respiration experiment is an important point and should be taken into account in adjusting the index plate over the reagent can. The actual distance to which the index button should be raised to have the bathing cap reach the point of optimum curvature and distension is a matter of a little experimentation. By means of the pump, air is introduced into the bathing cap, after a stopper has been placed in the opening of the mouthpiece. As the cap is being filled, there is obviously a vertical as well as a lateral displacement, but when it is nearly filled, there will be a point where a minimum motion of the pump piston will produce a vertical elevation of the index button on the bathing cap of only 1 or 2 mm. Each millimeter movement of the pump piston corresponds to the introduction of approximately 2 c.c. of air. It is desirable, if possible, to distend the bathing cap to a fairly high position vertically in the preliminary adjustment, so that in its final adjustment a 1 mm. vertical elevation of the cap will represent the introduction of not more than from 6 to 8 c.c. of air, or a change in the position of the pump piston of not more than 3 or 4 mm. This is the ideal point for beginning and ending respiration experiments. To establish this point, the vertical rod holding the index plate may require a few adjustments when being clamped to the extension rod in the assembling of the apparatus, for if it is too low, lateral distension will take place rather than a vertical movement when the final discharge of air from the pump is made. On the other hand, if the index plate is too high, undue tension will be required to extend the cap till the index button touches the index plate. Each time the rubber bathing cap is taken off (to renew the soda-lime) and replaced, the index rod should be readjusted to secure the optimum distension of the rubber cap. The position of the bathing cap shown in figure 1 represents the degree of distension which may normally be permitted.

ENRICHMENT OF RESPIRATORY SYSTEM WITH  
OXYGEN

If at the start of an experiment the closed system is filled with ordinary room air containing about 21 per cent. of oxygen, the decrease in the oxygen content during the progress of an experiment would be so rapid that a normal adult would soon actually exhibit signs of oxygen want. If, however, pure oxygen can be supplied as rapidly as the gas disappears from the closed system, obviously the subject would be breathing air of nearly normal composition throughout the entire test. Thus it is best to introduce oxygen into the system during the progress of an experiment. It was long ago demonstrated that there is no appreciable difference in the oxygen consumption whether the subject inhales ordinary air or air containing 80 to 90 per cent. of oxygen<sup>6</sup>. The danger lies in having too low rather than too high an oxygen content. Hence it is the custom to begin an experiment with oxygen-rich air in the system and, as the experiment continues, to introduce oxygen. In an experiment in which 6 pumpfuls of oxygen are introduced to replace the oxygen absorbed, approximately 2 liters may be considered to be consumed in a period of not far from 8 to 10 minutes. One starts the experiment by depressing the bathing cap down to the surface of the soda-lime and then, after connecting the subject with the apparatus and applying the noseclip, one admits oxygen (about 2.5 liters) directly into the closed system until the index button just touches the index plate. By this procedure the percentage of oxygen in the system at the beginning of the experiment will be from 60 to 80 per cent. If oxygen is also introduced during the experiment proper, no respiratory disturbances are encountered. (See page 1171 for discussion of technique.)

The total volume of air in this closed system is small, 3.5 liters when the bathing cap is distended. If at the moment of applying the noseclip the subject (especially if untrained) should inhale room air through the nose and discharge into the system a lungful of vitiated air, the oxygen percentage may fall rapidly. Instances of "oxygen want" have already occurred, due to lack of attention to this point on the part of the operator. The subject should be cautioned not to breathe into the apparatus, or he should hold his breath a few seconds until the noseclip is applied. Pure oxygen should then be introduced rapidly into the system.

## RUBBER BAG AS OXYGEN HOLDER

A rubber bag, preferably that used for the interior of basket balls, is recommended as a holder of pure oxygen in these tests. The lower end of the moistener, N, is fitted with a brass tube, t, in a one-hole rubber stopper, s. (See fig. 8.) The rubber bag, X, is attached to the other

end of this brass tube. A pinchcock, p, is provided on the bag, and the bag can be filled with oxygen from a cylinder of the compressed gas, or from an oxygen generator (see page 1168) before it is attached to the moistener.

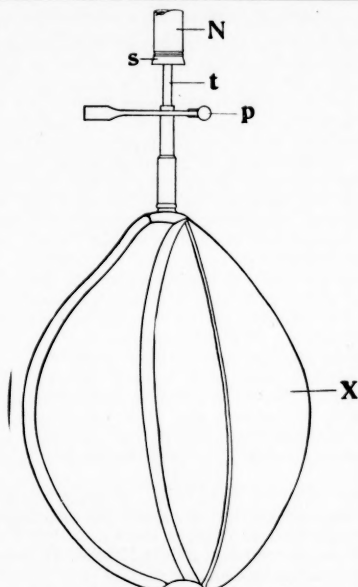


FIGURE 8

## Rubber Bag for Oxygen (Basket-ball Bladder)

The basket-ball bladder, X, is connected with the moistener, N (see, also, fig. 1), by a piece of brass tubing, t, one end of which fits into the short length of rubber tubing at the top of the basket-ball bladder and the other end of which passes through a 1-hole rubber stopper, s, in the bottom of the moistener, N. The pinchcock, p, prevents escape of oxygen from the bag while it is being attached to the moistener.

Oxygen from the basket-ball bladder is never drawn directly into the pump, but always through the moistening device, for the pump should deliver only saturated gas to the closed system. Indeed, moisture either in the pump barrel or in the oxygen bag aids in securing rapid saturation. If there is any appreciable tension (more than 10 to 20 mm. of water) upon the oxygen bag, the pressure should be momentarily relieved each time the pump is filled before discharging the oxygen into the apparatus.

The basket-ball bladder, when deflated, is an oval measuring 30 cm. in length and 17 cm. in width, and has a rubber stem 8.5 cm. long. It has a capacity of 10 pumpfuls of oxygen, and when it is thus filled the internal pressure will

not be over 10 mm. of water. If it is impossible to secure a basket-ball bladder, a football bladder (which will hold 4 to 5 pumpfuls with a pressure of not more than 10 to 20 mm. of water) or, indeed, a 2-quart hot-water bottle can be used.

#### SUPPLY OF COMPRESSED OXYGEN

Obviously the simplest way to supply oxygen to the closed circuit is from a cylinder of compressed gas. It is immaterial whether the oxygen is the commercial gas used for welding or the so-called "medical oxygen." If possible, it is desirable to secure the oxygen in 100-cubic foot cylinders, such as are supplied for innumerable industrial operations. In the field one should not, however, be too free with the use of oxygen. A sufficiency is necessary, of course, but beyond that the rest is wasted. When the large cylinders of oxygen are not available, it is possible that the smaller cylinders, the hospital size, containing a standard amount of about 40 gallons (150 liters), may be available. These are not so satisfactory, however, for two reasons, first, because of their small size and, secondly, because they contain the so-called "medical oxygen," which is more expensive than the commercial gas. One fault with the large cylinders, however, is that the valves are frequently not so tight as in the smaller cylinders.

The different sized high pressure oxygen cylinders which can at present be secured on the market are as follows:

200 cu. ft. cylinder; weight 150 lbs., 54 inches long, 9 inches in diameter.

100 cu. ft. cylinder; weight 120 lbs., 48 inches long, 7.5 inches in diameter.

130 gallon cylinder; weight 23 lbs., 29 inches long, 4.5 inches in diameter.

40 gallon cylinder; weight 10 lbs., 16 inches long, 3.25 inches in diameter.

#### PREPARATION OF OXYGEN IN THE FIELD

In many instances compressed oxygen will not be available. The problem of securing oxygen, which is absolutely essential in the use of this technique, then becomes somewhat complicated. Of the many methods for the preparation of oxygen in the chemical laboratory, most require some heating system and a fairly high temperature. When sodium peroxide is in contact with water, oxygen is freely liberated, particularly if the peroxide is combined with some catalytic agent. Such material is furnished in America under the technical name of "oxone" and in England under the technical name of "oxylith." We have found that the oxone may be purchased in small cans, each containing a lump of oxone weighing about 220 grams. One can of oxone, when immersed in water, will give off approximately 22 to 25 liters of oxygen.

The best procedure for generating oxygen is

to perforate the can of oxone with a number of holes and place it in a simple generator. (See fig. 9.) The generator consists of a brass cylinder, *c*, large enough in diameter to hold the can of oxone, *o*, and fitted at the top with a short length of standard brass pipe and a tee, just below which is a petcock, *p*. The can of oxone, *o*, rests upon a curved strip of brass, *b*, the ends of which fit into slots in the wall of the cylinder near the bottom, so that the can of oxone can not fall out of the generator by its own weight. The cylinder is lowered into water, and when the water comes in contact with the oxone, oxygen is rapidly liberated. The rate of oxygen liberation can be easily regulated by the petcock, *p*, for when this cock is closed the pressure inside the generator increases and forces the water

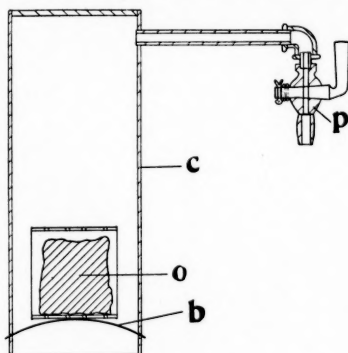


FIGURE 9  
Oxygen Generator

A can of oxone, *o*, perforated with holes at top and bottom, is placed inside a brass cylinder, *c*, and rests upon a curved strip of brass, *b*, the ends of which fit into slots cut in the wall of the cylinder near the bottom. At the top of the cylinder is a short length of brass pipe, to which is fitted a petcock, *p*. This generator is immersed in water and the oxygen generated is collected in a basket-ball bladder attached to the petcock, *p*.

down and away from the can of oxone. Ordinarily a wide-mouthed glass bottle has been used in the Nutrition Laboratory for the water container. A common water pail, three-fourths filled with water, would be as good. The oxygen generated is collected in a basket-ball bladder attached to the discharge nozzle of the generator. Fifty grams of oxone will generate about 6 liters of oxygen, i. e., enough to fill two basket-ball bladders.

The oxone method is reserved strictly for field work, where the metal cylinders are not available. Every effort should be made, if possible, no matter how remote the situation, to secure metal cylinders. Indeed, in all cases where the

apparatus is to be set up permanently in some central station or laboratory and the subjects are coming to that place to have their metabolism measured, cylinders of oxygen should be used. Only in those cases where house to house, or camp to camp, or village to village expeditions are made should the oxone method be employed, and even in these cases oxone should not be used if small, easily transportable cylinders are available.

#### TEST OF PURITY OF OXYGEN

Although it is almost impossible at the present day to purchase oxygen which is not highly pure, it is best to test the purity of the oxygen. A simple method for this test is to place in a test-tube a wad of steel wool which has previously been freed from fat or oil by cleaning with ether or alcohol and then dried. After the test-tube has been filled with water and inverted over water, it is filled with oxygen by displacement and allowed to stand for a day or two. Any gas not absorbed remains above the water which has risen inside the tube. A rough quantitative measure of the purity of the oxygen is thus at hand. The residual gas should never exceed 10 per cent. of the original volume.

#### BAROMETER

For field work obviously a good aneroid barometer alone is practical. Although, theoretically, it is by no means so accurate as a mercury barometer and is more liable to correction errors, an error of 7.5 mm. affects the oxygen measurements by only 1 per cent. With a moderately good instrument this error need hardly be expected. When studies are to be made at high altitudes, a barometer with suitable scale for low pressure readings is essential.

#### TESTS OF APPARATUS

The accuracy of the field respiration apparatus has been tested by alcohol check tests and by physiological tests (i. e., comparing the basal metabolism as determined by the field apparatus with that determined by the standard portable respiration apparatus), and it has been found that the apparatus measures the oxygen consumption accurately.

#### TESTS FOR TIGHTNESS

Before the apparatus is assembled, each part should be tested for tightness. The absence or presence of leaks in the metal can with bathing cap cover is quickly proved by plugging the two valve openings with rubber stoppers, depressing the inverted can in water, and noting whether any air bubbles rise to the surface of the water. The valve housings can be plugged at one end and immersed in water, and by blowing through rubber tubing a test for leaks can be quickly made. Even the light metal mouth-

piece holder should be tested in this manner, for during difficult transportation it may have been subjected to slight strains in packing or unpacking. After the apparatus is assembled, a rubber stopper should be placed in the mouth-piece holder and the rubber bathing cap should be distended to a moderately rounded form, with the index button just touching the index plate. A ring weighing approximately 35 to 50 grams should be placed on top of the cap around the index button, and this will, of course, depress the button noticeably. At the end of 3 minutes the ring is removed, and if any appreciable leak is present, it will be seen that the button does not come back to the index plate. Pinholes are occasionally found in the rubber bathing cap. These can be located usually by removing the cap from the can and submerging it in a basin of water, pocketing a fairly large volume of air in the cap so that the air will escape through the leaks and bubble up through the water. The cap is then removed from the water and dried, and any pinholes which have been located are mended by placing on the *inside* of the cap a disk of adhesive tape or plaster. If a leak ever occurs around the index button, one can cement a man's ordinary collar button to the top of the cap, filling up the hole on the inside of the cap with a bit of wax or a piece of ordinary chewing gum which has been well softened.

#### TESTS OF EFFICIENCY OF VALVES

Although the air pipes entering and leaving the soda-lime can are well protected by fine wire gauze, occasionally bits of soda-lime pass through and become lodged in the openings (slits) of the rubber valves, thus preventing tight closure. Under these conditions the valves become inefficient and rebreathing in varying degrees may take place. To test the efficiency of the valves, one should pinch off the tube leading from the valve  $V_1$  and blow through the tube leading to valve  $V_2$ . If there is a leak through the valve  $V_2$ , the bathing cap will slowly rise. Reversing the process, one should close the tube leading to the valve  $V_2$  and suck strongly on the tube leading to the valve  $V_1$ . If  $V_1$  leaks, the bathing cap will fall. Perfectly functioning valves are essential to good work.

#### TESTING THE PUMP

*The pump must be tested at the beginning and possibly at the end of every experimental day.* The method of testing is simple. Prior to the test, the piston rod should be pulled out as far as possible. The rubber tubing leading from the pump should be provided with a glass tube about 5 inches long, which dips into a glass half full of water. When the pump handle is depressed about 1 inch, air will be discharged through the water, and the level of the water in the glass tube should not change or, in other

words, should not run back up into the tubing. Since the pump is mounted vertically, it is necessary in the case of a loosely fitting piston to pinch the rod with the fingers resting on the top part of the pump, to prevent the piston from falling by its own weight. The pump handle is then pushed down another inch or two and the same observation is made. This procedure is repeated at from 4 to 6 points throughout the length of the barrel. It is estimated that the entire test does not occupy more than 1 minute and gives definite proof as to the tightness of the pump. The pump should not leak at any point. If a leak is found anywhere, it is liable to be at the end of the last part of the stroke. One should therefore note especially when the handle is way down, whether the water level recedes. Care should be taken not to suck water back into the pump, and any accidentally entering should be immediately forced out prior to any tests.

#### CALIBRATION OF PUMP

Although these pumps, as supplied by the manufacturer, are all made of the same standard size tubing and all have a standard length of stroke (200 mm.) and hence, theoretically, (provided the internal diameter is constant and uniform in all cases) should deliver the same amount of air per stroke (about 370 c.c. apparent volume), it is best to calibrate each pump and determine exactly the apparent volume of air delivered. For the calibration of the pump two flasks are used, one having a capacity of 400 c.c. and the other of 500 c.c. The larger contains sufficient water at room temperature to more than fill the pump. The smaller flask is weighed to the nearest tenth of a gram. A rubber hose, which fits tightly over the opening of the pump, is dipped into the water in the 500 c.c. flask, and water is sucked into the pump. The intake point of the pump should be held uppermost, with the body of the pump low. Approximately one-sixth of the water-content of the pump is discharged a couple of times back into the 500 c.c. flask, in order to force out any air trapped in the pump. When it is certain that only water is being sucked into the pump and that the pump and connection are completely filled with water, the end of the attached hose is placed in the previously weighed flask (400 c.c.), and the piston is slowly pushed into the pump its full length. This movement of the piston obviously discharges a volume of water corresponding precisely to the volume of air in the discharge of the pump as ordinarily used. No attempt should be made to force out the water remaining between the piston and the base of the pump and the water in the tube connection at the end of the stroke, for the calibration deals only with the volume of water corresponding to the normal 200 mm. stroke of the piston. The 400 c.c. flask is weighed again after this

procedure and the difference in weight noted. The gain in weight in grams is directly converted into cubic centimeters, representing the volume of the pump barrel.

Calibrations of six different pumps, each having a standard length of stroke of 200 mm. and an internal diameter of approximately 48.5 mm., have shown that the average discharge per stroke is 369.5 c.c.

#### CARE IN USE OF APPARATUS

In the use of the pump it is highly important that several rules be observed. (1) The hand should never be placed upon the barrel of the pump, for the pump would thus be warmed. (2) The piston should be pushed way in and drawn way out so as always to get the complete length of stroke. In those exceptional instances where a fraction of a stroke is used, this must be carefully measured with a millimeter scale. (3) The 3-way valve must be turned always at the end and at the beginning of a stroke and never midway. (4) When air is taken into the barrel of the pump under any pressure conditions other than strictly atmospheric, momentary connection with the atmosphere should be made to insure atmospheric pressure. (5) A thermometer reading to a tenth of a degree should be placed with its bulb in contact with the barrel.

It is strongly recommended that operators try out their own apparatus not infrequently. At least once a week one ought to lie down and breathe into the apparatus for not less than 5 minutes, to make sure that there is no resistance to breathing, that there is no oxygen want, and that the soda-lime is efficient.

The most important, most delicate features of the apparatus are the rubber parts, particularly the rubber diaphragm at the top, and to a certain extent the rubber valves and the rubber tubes leading to the mouthpiece. The delicate membrane of the bathing cap is not very rugged, and one should not give it severe physical abuse. The fact that one of these bathing caps was used for a year at Mount Holyoke College under strenuous conditions and that one has been used in the Nutrition Laboratory for several thousand periods shows what can be accomplished with a cap which has received good care. The most deleterious agent is light. It is therefore desirable to throw a black cloth over the entire apparatus, including the rubber parts, when not in use. It is immaterial if moisture collects perceptibly inside the reagent can and the entire under side of the rubber cap is moist. This does no harm, but light does do a great deal of harm.

One should not get oil from the pump and the pump piston onto the hands and onto the rubber diaphragm, for oil rapidly spoils the thin rubber.

In handling the apparatus, especially in demounting it, care should be taken not to handle it by the top and not to put the pressure of

the thumb or fingers down upon the thin rubber bathing cap on the edge of the top of the can, although this is perfectly rounded and well protected by a large round ridge. The thin rubber will not stand this abusive treatment. Care should also be taken not to get a sharp piece of soda-lime between the bathing cap and the reagent can and thus puncture the cap.

The oxygen bag (basket-ball bladder) should similarly be protected from oil, rough handling, and light.

The Saddle valves are enclosed in metal housings and therefore are thoroughly protected from light. This does not mean that they are to be neglected. One should frequently test them, blowing in one side and sucking out the other side to see if they open and close freely and completely.

The tubing going from the pump to the 3-way valve and again to the reagent can is of ordinary rubber and needs a reasonable amount of inspection and care.

#### TECHNIQUE OF AN EXPERIMENT

It is commonly assumed by all workers in metabolism that certain conditions are prerequisite for basal metabolism measurements. These are (1) that the subject should have been at least 12 hours without food and that the last meal should preferably not have been too high in protein or too excessive in calories\*; (2) that there should be a preliminary period of rest of not less than 30 minutes, during which time the subject should be lightly covered with a blanket, if necessary, to insure comfort. Above everything else, it is important that there should be complete muscular repose during the test and this means absence, in so far as possible, of all muscular tension. There should be absence of psychological activity. The temperature, at least in the mouth, should be within normal limits, and the subject should preferably be kept awake. Under these conditions the experiment proceeds as follows:

The mouthpiece, which has previously been cleansed, is placed in the mouth, the rubber flap being between the teeth and the lips. The bathing cap should have previously been depressed to its lowest point. The subject should be instructed to hold his breath for a few seconds. The noseclip is firmly attached and the closed system is simultaneously enriched with oxygen. Frequently the subject will prefer to apply the noseclip himself. A complete closure of the nostrils is necessary. With each respiration the bathing cap will rise and fall, and enough oxygen should be introduced until, at the end of an expiration, the index button just

touches the index plate and, indeed, until the cap exhibits a slight over-distension. Excessive pressure is undesirable, for the subject must exhale against this pressure.

If compressed oxygen from a cylinder is used, it may be introduced directly from the cylinder into the closed system during the preliminary period of enrichment (through the valve O, fig. 1). But if oxygen generated from oxone is used, it is introduced from the basket-ball bladder by means of the pump, being drawn first through the moistener to remove any alkali fumes or solid particles which may be present. During the experiment proper, oxygen is always introduced by the pump from the basket-ball bladder and is always drawn first through the moistener, since the metered oxygen is to be calculated on the basis of saturation.

At the end of each expiration the button will press less and less against the index plate, and shortly it will just fail to touch. The time when the end of this particular exhalation occurs should be noted either on a stopwatch\* or on an ordinary watch, the position of the second hand being first recorded and then the positions of the minute and hour hands. This is the start of the experiment.

As time goes on, the bathing cap rises less and less at the end of each exhalation, since oxygen is being used up. Oxygen is therefore to be introduced to make up for the amount withdrawn. Instead of waiting until the end of the experiment, some 8 or 10 minutes, and then putting in the oxygen all at once, it is recommended that the technique employed by Mrs. Cornelia Golay Benedict should be followed, namely, starting with a complete pumpful of oxygen, slowly push the oxygen into the can, making any major movements of the plunger when the bathing cap is at its highest point, i. e., toward the end of an exhalation. Shortly, enough oxygen will have been taken out of the closed system to permit the complete discharge of one pumpful. When the plunger nears the end of a complete stroke, the last 20 to 40 mm. of the stroke are rapidly pushed in so that a slight excess of gas is present in the rubber cap with slight indications of distention, i. e., with the button hitting the index plate and a slight bulging of the cap, exactly as at the beginning of the period. One then waits, as at the start, until the button just fails to touch the index plate. The time should be noted, but the stopwatch should not be stopped. This recorded time indicates the time required for the absorption of one complete pumpful of oxygen, ex-

\*A sojourn under surveillance for 12 hours before the metabolism test may be desirable with careless or untrustworthy subjects, in order to insure absence of food in the alimentary tract at the time of the experiment. But if one is certain that no food has been taken for 12 hours, such a sojourn is not necessary to secure basal measurements.

\*For simplicity's sake the use of the stopwatch should be avoided since, particularly in the field, this must be looked upon as a distinctly delicate instrument. In the laboratory there are certain conveniences in using a stopwatch. Indeed, it has been suggested that a stopwatch with two hands may actually be helpful. In expeditions where such types of instrument are part of the regular equipment, obviously use may be made of them. No difficulty should be experienced, however, in employing the ordinary standard watch with second hand.

pressed in minutes and seconds. The time elapsed for each successive pump stroke up to six full strokes is recorded. At the end of the sixth stroke, after noting the time, the noseclip and mouthpiece are removed and the barometer is read. The temperature of the pump is usually read after the introduction of the third pumpful.

When the necessity for conserving oxygen is great, several methods may be employed which will tend to conservation. In the first place, it is not unlikely that many subjects can retain the mouthpiece in place not for 6 but for 12 or, indeed, 18 strokes of the pump, thus permitting the carrying out of two or three consecutive experiments. Should the last 6 pumpfuls be complicated by the disturbing factor of uneasiness or discomfort, this would be shown immediately in a higher metabolism. Under these conditions only one initial enrichment of the air would be necessary, and the amount of oxygen required thereafter would be that actually delivered by 18 strokes of the pump. Oxygen may be conserved likewise by sealing off the rubber tubing between the exit valve,  $V_2$  (fig. 2), and the mouthpiece with a wooden clamp at the end of an experiment, simultaneously with the removal of mouthpiece and noseclip. Thus, at the end of an experiment the oxygen-rich contents of the distended bathing cap are retained in large part intact for the beginning of the next period. This procedure likewise serves as a fairly good check upon the efficiency of the intake valve,  $V_1$  (fig. 2), for if this valve leaks appreciably, the bathing cap will descend by back leakage through this valve. Obviously if the valve  $V_1$  leaks, it should be cleansed or replaced, but so far as the conservation of oxygen is concerned, leakage of oxygen through this valve after the removal of the mouthpiece can be completely prevented by immediately placing a rubber stopper in the mouthpiece holder.

#### CALCULATION OF RESULTS

This technique requires but one major observation for the determination of the oxygen consumption of an individual, i. e., a record of the time in minutes and seconds required for the absorption of six successive pumpfuls of oxygen. Since by calibration the apparent volume of each pumpful introduced into the closed system has been shown to be constant, i. e., 369.5 c.c., the total apparent volume of oxygen consumed during an experiment of six pumpfuls is constant, i. e., 2217 c.c., and the only variable is the length of time required for the absorption of this volume.

To make the results of one experiment comparable with those of another, it is necessary to reduce the total apparent volume to 0° C. dry and 760 mm. For this purpose records of the temperature of the pump and the barometric

pressure are necessary, since this reduction is made by the equation:

$$V_{\text{corrected}} = 2217 \times \left\{ \frac{273}{273 + t} \times \frac{p - e}{760} \right\}$$

in which  $t$  is the temperature of the pump,  $p$  is the observed barometric pressure\*, and  $e$  is the tension of aqueous vapor at the temperature,  $t$ . This equation is based upon the fact that gases increase in volume  $1/273$  for each degree rise in temperature and that the volume increases directly with decreasing barometric pressure. The result of this calculation gives the actual volume of oxygen under standard conditions of temperature and pressure consumed by the subject during the experiment.

The volume of oxygen consumed per minute, from which the heat production is usually calculated, is obtained by simple division of the total reduced volume by the elapsed time. The calculation is thus more simply expressed as:

$$O_2 \text{ per minute} = \frac{2217 \times m}{T}$$

in which  $m$  is the reduction factor corresponding to the portions of the first equation enclosed in brackets, and  $T$  is the time expressed in minutes and decimal parts of a minute. Tables have been prepared giving in one factor the entire correction represented by  $m$ , and if one knows the barometric pressure and the temperature of the pump, the reduction factor is readily obtained.†

For purposes of illustration we may cite an experiment made on a Maya by Dr. G. D. Williams, associated with Dr. Sylvanus G. Morley in the archaeological expedition of the Carnegie Institution of Washington at Chichen Itzá in Yucatan, Mexico. The subject was a man, 21 years old, weighing 49 kg. (clothed), and was 145 cm. in height. He was in the post-absorptive condition (i. e., 12 hours without food), had been lying down for 30 minutes prior to the experiment and was in complete muscular repose. In this experiment the six pumpfuls of oxygen introduced by the pump required 9 minutes and 26 seconds for absorption. The temperature of the pump (corrected for error in the thermometer) was 27.8° C., and the barometric pressure (aneroid) was 762 mm. According to Carpenter's tables‡ the reduction factor for the temperature of 27.8° C. and the barometric pressure of 762 mm., making allowances

\*In case a mercurial barometer having a brass scale has been used, the barometer reading should be corrected to 0° C. before being employed in the above formula, and in such a case it is necessary to know the temperature of the barometer. Obviously this correction is unnecessary if the barometer graduations are on glass or if an aneroid barometer is used.

†Since we are dealing with a saturated gas, the reduction to 0° C. dry and 760 mm. pressure should include the correction of the pressure for the tension of aqueous vapor at the temperature of the pump. The reduction factor,  $m$ , for saturated volumes is obtained by looking up the temperature of the pump at the observed barometric pressure in table 7 or 8, pages 39-70, in Carpenter's book of tables (Carnegie Inst. Wash. Pub. No. 303A, 1924).

for saturation with water vapor at 27.8° C., is 0.876. The time, expressed in minutes and decimal parts of a minute, was 9.43 minutes.\* The equation then becomes:

$$\text{O}_2 \text{ per minute} = \frac{2217 \times 0.876}{9.43}$$

from which it can be calculated that the reduced oxygen consumption per minute is 206 c.c.

For convenience Carpenter's tables include the logarithm of the reduction factor as well as the actual factor itself, so that the computations may be made by adding to the logarithm of 2217 (3.34577) the logarithm<sup>9</sup> of the reduction factor 0.876 (9.94267—10) and subtracting from this result the logarithm of 9.43 (0.97451), i. e., the time in minutes.

In the foregoing calculation the time noted at the moment of introducing the sixth pumpful was an accurate record of the time required for the absorption of 2217 c.c. (apparent volume) of oxygen. It is conceivable, however, that during the last exhalation of the subject either a shift of position or some alteration in the type of respiration may alter the residual air in the lungs, and thus a false reading at the end of the experiment will be obtained. Usually if one inspects the differences in time required for the absorption of each pumpful, such a false reading is instantly noted and the time for the fifth pumpful may perhaps be found to be more in conformity with the preceding records than the time for the sixth pumpful. In such a case, the calculation is based upon the time and the volume for 5 pump strokes. It has been found more advantageous, however, to follow another method entirely.

In a typical experiment the actually recorded times (as read on a watch) and the duration of time (expressed both in minutes and seconds and in minutes and decimal parts of a minute) required for the absorption of each of six successive pumpfuls of oxygen were as follows:

Pump strokes	Watch time			Duration		
	hrs.	mins.	sec.	mins.	sec.	= min.
0	10	03	00	—	—	—
1		4	32	1	32	1.53
2		5	55	2	55	2.92
3		7	28	4	28	4.47
4		9	09	6	09	6.15
5		10	33	7	33	7.55
6		11	24	8	24	8.40

To prove the accuracy of these recorded times, especially that for the sixth pumpful, a piece of coordinate paper (ruled in 25 mm. squares), upon which the abscissae represent the number of pump strokes and the ordinates the time in minutes, is covered with a sheet of celluloid and both are tacked onto a board. (See fig. 10.) By

means of a pen or a fat (china or glass-marking) pencil the actual times (in minutes and decimal parts of a minute) which have elapsed for the successive absorption of each pumpful from the

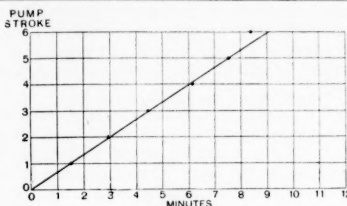


FIGURE 10

*Graphic record of the oxygen consumption, as obtained by plotting the time required for the absorption of each pumpful of oxygen*

The abscissae represent the number of pump strokes and the ordinates the time in minutes.

first to the sixth, consecutively, are plotted on this chart. Usually these plotted points (including the zero)\* will fall in a straight line (laid on with a black thread or a ruler), which will represent almost unerringly the slope of the oxygen consumption. Under these conditions the last reading for the sixth pump stroke can be corrected, if it does not fall on the straight line (and it does not in the particular experiment illustrated in figure 10), and the point at which the projected line for the sixth pump stroke cuts the time line may be taken as the true time for the sixth stroke. The plot in figure 10 shows that the time for the sixth and most important stroke was incorrect. But since from the plotted points for the other pump strokes there is no doubt as to the slope of the line, the total time required for the absorption of six pumpfuls of oxygen is corrected from 8.40 minutes (as actually recorded) to 9.10 minutes (as read on the chart), and this so-called "plotted time" is used in the calculation of the oxygen consumption per minute.

It is surprising how frequently readings, which are seemingly aberrant, may be smoothed out by plotting in this way and laying the most probable line through the plotted points. It is of the utmost importance, however, that at the end of each stroke the observer should not be influenced by the time records, but should note absolutely the time when the index button first fails to touch the index plate, even if at a subsequent respiration it hits the plate and sev-

\*It is necessary to convert the time as recorded in minutes and seconds to minutes and decimal parts of a minute. Thus, 2 minutes and 26 seconds equal 2.43 minutes.

\*The time for the start of the experiment is usually exact, since one can control the correctness of the start by repeating the process of filling up the bathing cap with oxygen, if the first attempt is not satisfactory. The straight line will therefore almost always pass directly through the zero point on the chart. In those rare instances where a good start is not secured, the starting time may be incorrect by a few seconds and the straight line will then not pass exactly through the zero point. In such a case, the true time for six pumpfuls is represented by the distance between the corrected starting point and the corrected end point.

eral seconds may elapse before it permanently fails to come in contact with the plate. By observing this rule rigidly and plotting the recorded time, one is rarely, if ever, in doubt as to the slope of the line. With particularly irregular breathers it is frequently desirable to continue the experiment for perhaps 7 or 8 pump strokes, in which case the error due to irregular breathing is correspondingly decreased.

Since it is always advisable to plot the times for the six pump strokes, in order to check the accuracy of the recorded times, and since the plotted time is the more correct because it represents essentially an average of all the six recorded times, it has been recommended to all of our field associates that the calculation of the oxygen consumption per minute be based upon the so-called "plotted time."

#### ACTUAL USE OF APPARATUS IN MEDICAL AND PHYSIOLOGICAL FIELD WORK, AND RESPONSIBILITY OF OBSERVERS

This apparatus, although built in a condensed and easily transportable form as the result of the urgent need of an apparatus for use in the field, permits the medical missionary and explorer working in even the most remote places to make exact measurements of the basal metabolism. A note of caution regarding its use is, however, essential, for notwithstanding that the apparatus is substantially constructed and has undergone the most rigid chemical and physiological tests, its simplicity is liable to be misleading. To secure accurate metabolism measurements demands not simply a well-functioning apparatus but a well-versed technician, preferably one understanding more than the mere mechanical routine of conducting an experiment, i. e., one thoroughly conversant with the fundamental principles underlying metabolism research.

In a study of racial metabolism obviously the largest differences to be expected are not very great. Hence it is important that the data should be collected with a uniform technique, preferably with the same form of apparatus, that the observer should have a true knowledge of the food intake prior to the measurements, and that the subject should have the greatest degree of muscular and psychic repose during the test. The importance of these factors can be realized only by a period of thorough training in a well-established metabolism laboratory, and it is distinctly preferable that all observers should receive the same training. The reading of a book of directions, no matter how carefully prepared, cannot supplant such a period of training, and in the racial metabolism research thus far in progress all workers who have been supplied with the field respiration apparatus have been trained at the Nutrition Laboratory or

have been trained by those who have personally had training in the Nutrition Laboratory. Obviously in pathological cases the deviations of the metabolism from the normal are frequently so large that the influence of technical errors is minimal, but it is precisely in the medical use of such an apparatus that the theory is too often lightly regarded. The correspondence of the Nutrition Laboratory only too frequently shows a woeful lack of knowledge by medical men of even the simplest principles of metabolism measurements.

The apparatus, as first devised by Mrs. Benedict and myself, was intended solely for student laboratory work, but its subsequent development has shown that it is capable of great accuracy. We sincerely hope that the simplicity of the technique will not tend to lessen the responsibility of users of the apparatus to ground themselves thoroughly in the fundamental principles. To insure uniformity and accuracy of construction the original student apparatus was patented by Benedict and Benedict (U. S. patent number 1550335, August 18, 1925), and the patent was at once transferred and given to the Carnegie Institution of Washington.

The extent of the research on racial metabolism in its present stage is indicated by the names and locations of the observers who are now in the field with this apparatus, most of whom have already sent many protocols to the Nutrition Laboratory:

Professor H. G. Earle, School of Physiology, University of Hongkong, Hongkong; Mr. Morris Steggerda, Jamaica, B. W. I.; Mr. O. W. Torreson, Huancayo Magnetic Observatory, Huancayo, Peru; Dr. G. D. Williams, Chichen Itzá, Dzitas, Yucatan, Mexico; Dr. J. E. Gullberg, Rabaul, New Guinea; Professor C. S. Hicks, Department of Pathology, University of Adelaide, Adelaide, South Australia.

#### METABOLISM STANDARDS

Based upon the Nutrition Laboratory's large series of measurements of presumably normal American men and women, certain standards or normals have been drawn up by various writers. Believing that undue emphasis is often laid upon a so-called "standard," but recognizing that it is the habit of most individuals to refer any set of measurements to some standard for comparison, the Nutrition Laboratory has made extensive use of the standards deduced by statistical methods from the measurements of 136 men and 103 women<sup>10</sup>. In clinical laboratories preference is usually shown to the somewhat simpler Aub and Du Bois standards<sup>11</sup>. Both standards have been conveniently presented in Carpenter's tables<sup>12</sup>.

#### SUMMARY

A small, light-weight respiration apparatus, a so-called "field respiration apparatus," per-

mitting the accurate measurement of the oxygen consumption of humans, has been developed for use, particularly in studying the metabolism of remote races. In principle it is the same as the student respiration apparatus of Benedict and Benedict. The subject breathes through a rubber mouthpiece into a closed circuit of oxygen-rich air. This closed circuit consists of a metal can, partly filled with soda-lime for the absorption of the carbon dioxide produced, and covered with a light-weight rubber bathing cap for the expansion and contraction of the air during respiration. The oxygen consumed is replaced by oxygen from a rubber bag, i. e., a basket-ball bladder. The oxygen is saturated with water vapor, and is then metered through a pump of known and constant volume of stroke. The experiment begins and ends with the bathing cap at a definite degree of distension, and the oxygen introduced during the experiment is thus a measure of the oxygen consumed by the subject.

The closure of the piston on the pump is of a new type, insuring absolute tightness. Constancy in the length of stroke of the pump handle is secured by metal to metal contacts. A supporting stand and a carrying case are provided for the apparatus.

A simple oxygen generator is described, by means of which oxygen may be generated from a commercial preparation of sodium peroxide

when it is impossible to secure cylinders of the compressed gas.

Details are given regarding the technique of conducting an experiment with this apparatus, the tests for tightness, and the calibration of the pump, and typical illustrations are given of the method of calculating the results.

The apparatus has been so simplified and standardized that it enables the determination of the oxygen consumption (apparent volume) of an individual *with but one major measurement*, i. e., the time required for the absorption of six pumpfuls of oxygen.

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## THE EARLY DIAGNOSIS AND NONPARALYTIC ANTERIOR POLIOMYELITIS

BY ELIOT H. LUTHER, M.D.

**D**URING the past summer and fall Massachusetts has experienced the second severest epidemic of anterior poliomyelitis in her history, exceeded only in 1916 when the disease was pandemic. Much interest has been aroused, and there appears to be considerable confusion regarding mild forms of the disease, and the diagnosis, either before or in the absence of paralysis. A short article on these points, based on observations made during the recent epidemic, does not seem out of place.

To begin, let us consider what is apparently the fully developed case of the disease. The patient is taken sick with a gastro-intestinal disturbance, and fever, usually lasting one day, and then clearing up. Since there are no indications of involvement of the central nervous system this may well represent a generalized infection with the virus of the disease. There are no symptoms for the following three or four days, and then there is a recurrence of fever, gastro-intestinal symptoms, and frequently headache, irritability, and drowsiness, and rigidity of the spine. This would appear to mark the invasion of the central nervous system, which is followed after thirty-six to forty-eight hours by paralysis,

representing the injury or death of the anterior horn cells in the spinal cord.

The assumption that the disease may stop at any point in its development offers an explanation for the abortive type, where there is a generalized infection with the virus of anterior poliomyelitis, which does not go on to localization in the central nervous system; the nonparalytic type where there is a demonstrable invasion of the central nervous system both by physical signs and lumbar puncture, but where no discoverable paralysis ensues; and the paralytic type where there is invasion and injury to the central nervous system, with the characteristic and often-times crippling paralysis, which gives the disease its interest and its dread.

As far as the abortive type goes, there is an attractive theory that it is widespread and prevalent, and that most of us have had it, and thereby obtained an immunity to the disease. Suffice it to say that without the involvement of the central nervous system there are no characteristic signs to be obtained on physical examination lumbar puncture is negative and the diagnosis must rest on symptoms alone; these symptoms being fever and a gastro-intestinal disturbance,

with or without headache. As these may also be the symptoms of many acute infections, and furthermore as this stage of the disease is accompanied by symptoms in only about ten per cent. of the known cases, until some further method of diagnosis is available its prevalence must remain a matter of conjecture.

Turning now to the better defined types, the nonparalytic and the paralytic, we find that they are indistinguishable at the onset, the difference being that after two or three days of illness paralysis supervenes in the latter, whereas the former recovers. For purpose of early diagnosis, the two can be treated together.

The child, for it is usually a child, is taken sick with fever, headache, and a gastro-intestinal disturbance, which this summer consisted of vomiting and constipation, although occasionally diarrhea was seen. Drowsiness and a desire to be let alone are also frequently observed. While these symptoms are fairly constant, the absence of one or more does not rule out the disease, and as pointed out earlier, they are not characteristic enough to warrant a diagnosis on symptoms alone.

It is, then, the physical signs to which one must look for diagnosis, and these make the early picture of infantile paralysis a fairly characteristic one. On observation the child seems prostrated to a greater degree than the temperature, which is usually under 102, would warrant. The face is flushed, the expression anxious, and there is frequently pallor about the nose and mouth. The throat is mildly injected, but not enough in itself to account for the child's condition. The pulse is usually rapid out of proportion to the temperature. The rest of the physical examination is negative, except for that portion which deals with the nervous system. There is frequently a rather coarse tremor when the child moves, which may be very striking. There is a slight rigidity of the neck. It is not the stiff neck of a meningitis, nor is the head usually retracted. The child tilts the head on the neck, but does not bend the neck on the shoulders. As a result, the head can be brought about half way forward, when resistance is encountered, and the child complains of pain. More constant and more characteristic than the stiffness of the neck is a stiffness of the spine. This is best brought out by sitting the child up in bed and trying to bend the head down onto its knees. The average child, ill with other infections, is very flexible, and has no difficulty in doing this. These children cannot. If they bend forward at all it is from the hips with the spine held stiffly. Many of them cannot bend forward enough to assume a comfortable sitting position without propping themselves up on their arms. The rigidity of the neck is brought out to a more marked extent in the sitting position. There is seldom a Kernig's sign at this stage, and the deep reflexes are usually hyperactive, rather than diminished. A

cerebral tache is almost always present, and grows more marked as time goes by, until it frequently becomes a purplish irregular blotchy line a half inch or more in width after two or three days. It is the presence of the above signs and symptoms, which justifies a probable diagnosis of anterior poliomyelitis, and calls for the final step in the diagnosis.

This step is a lumbar puncture and examination of the spinal fluid. The fluid is usually under increased pressure. It is not quite clear, presenting a ground glass appearance when examined carefully. There is an increase in cells, usually between 50 and 250, but occasionally as high as 700 to 800, or as low as 20. These cells may be largely polynuclear early, but later are lymphocytes. There is an increase in globulin.

It is true that acute infections accompanied by meningismus may simulate the clinical picture of early infantile paralysis, but usually the cause of meningeal irritation becomes evident on physical examination, while in the event of doubt, the lumbar puncture as a rule gives a normal spinal fluid. Tuberculous and luetic meningitis, or encephalitis may give a spinal fluid which may be confusing, but the clinical picture is usually sufficiently different to avoid mistakes.

Having made the diagnosis, there is, unfortunately, still no method of separating the nonparalytic and paralytic case at this stage of the disease. It is impossible to predict either from the clinical symptoms, physical findings, or spinal fluid changes, whether the case will escape without paralysis or go on to a fatal termination, and there are no accurate figures available as to the percentage of nonparalytic cases. However, that there is not a high percentage of such cases seems probable, as in Haverhill with a total number of 108 cases reported, the majority of whom are paralyzed, only twenty-four pre-paralytic diagnoses were made, and not all of these even with serum treatment, can be considered nonparalytic. Conditions for finding nonparalytic cases if they existed in any numbers were ideal. The public was thoroughly alarmed, and a doctor was called, in many cases, as soon as a child showed symptoms, and Dr. Aycock, Dr. Cherry, or myself, was asked to see the child if the slightest suspicion existed regarding the case. The result was that we saw a large number of sick children, sick with tonsillitis, naso-pharyngitis, otitis media, bronchitis, and the like, with occasionally more serious infections, such as pneumonia, scarlet fever, or rheumatic fever, but only twenty-four definitely proved early cases of infantile paralysis were uncovered. On the basis of histories alone, many of these other infections would probably be considered abortive or nonparalytic cases giving a false impression of their prevalence.

There are two good reasons for keeping the early picture of the disease clearly in mind.

In the first place, it is possible to sift out children, with the ordinary mild infections, brought in by anxious parents, and assure them that their child is not coming down with infantile paralysis. In the second place the best hope of successful treatment lies in early diagnosis, as the paralysis represents in a large part, the death of the nerve cell, and there is little reason to believe that we can ever restore dead nerve tissue.

To sum up:

1. In the present state of our knowledge the prevalence of the abortive case of poliomyelitis

as previously defined must remain a matter of conjecture. It is the type of case more often heard about than seen.

2. The nonparalytic and paralyzed case are alike in their onset, and can be diagnosed accurately in the majority of cases in the absence of or before the occurrence of paralysis.

3. The nonparalytic case as defined in this paper probably does not constitute a very large proportion of the total number of cases.

NOTE—This work was done under the auspices of the Harvard Infantile Paralysis Commission.

## MULTIPLE HEREDITARY TELANGIECTASIS

### Report of Five Cases in One Family

BY JAMES BALPH, M.D.

**M**ULTIPLE Hereditary Telangiectasis was first recognized as a clinical entity by Rendu in 1896. As early as 1865, however, Babington reported a case which was probably an example of the disease and Legg in 1876 reported another which he apparently thought was Hemophilia. Chiari in 1887 and Chauffard in 1896 also reported cases. These authors believed they were dealing with Hemophilia, though study of their reports in the light of present knowledge shows that their diagnosis was incorrect. An article published by Osler in 1901 gave the first real impetus to an earnest study of this condition.

The disease may be defined as follows: A hereditary disease characterized by repeated hemorrhages from telangiectatic spots, situated on the mucous membranes of the nose, mouth, conjunctiva, tongue, lips and less often skin of the face and hands.

The only constant factor in the etiology is heredity. Atavism is repeatedly present as shown by Fitzhugh, who states that where no hereditary factor can be demonstrated the disease has skipped a generation to appear in the next. Miller believed smallpox to be the etiological factor in his case in which no hereditary factor could be demonstrated. This seems improbable in view of the fact that smallpox is rarely encountered in a study of the cases that have been reported in the literature up to the present time.

Two theories have been advanced in an attempt to explain the cause of the hemorrhages. First, that there is present some as yet undemonstrated blood dyscrasia. Second, a mechanical reason explaining the hemorrhages as the result of trauma however slight to blood vessels with abnormally thin walls which compose the telangiectases.

Among the symptoms bleeding from the nose is the most constant, being present in practically every case. In most cases this epistaxis begins in

childhood before the telangiectases are seen. At about the twentieth year telangiectases consisting of dilated venules and capillaries appear on the mucous membranes of the cheeks, tongue, lips, and pharynx and the skin of the face, hands and fingers. Less commonly they appear on the trunk. When once established they are permanent. "These spots" have been demonstrated in the nose long before any had appeared in the mouth or externally, thus accounting for epistaxis beginning in childhood. It is not uncommon to have severe bleeding from the spots wherever situated and this following the most trivial type of trauma. Epistaxis during sleep is not unusual and is thought to be due to congestion of the nasal membrane occurring at that time. The other symptoms which the patients may show depend on the degree of anemia present.

The diagnosis of this disease can be made if there are present telangiectases on the skin or mucous membranes associated with epistaxis and having a hereditary tendency and occurring in males and females. Again it may be stated that the disease may skip one generation and appear in the next.

The blood examination in these patients is either normal or shows a secondary anemia if the bleeding has been sufficient.

Purpura Hemorrhagica and Hemophilia are the conditions most likely to be confused with Multiple Hereditary Telangiectasis. The differential points are as follows:—

<i>Telangiectasis</i>	<i>Hemophilia</i>	<i>Purpura Hemorrhagica</i>
"Spots" are permanent	No "Spots"	"Spots" fade and reappear
Definite family history	Family history present	No family history
Males and females affected	Males only affected	Males and females affected
Transmitted by males to females	Transmitted by females only	Not transmitted

<i>Telangiectasis</i>	<i>Hemophilia</i>	<i>Purpura Hemorrhagica</i>
Coagulation time normal	Coagulation prolonged	Coagulation normal
No abnormal bleeding unless "Spot" is ruptured	Persistent bleeding from trauma	Ecymoses, etc., but no persistent bleeding
Blood platelets normal	Normal	Definitely reduced
No fever	No fever	Fever common

As to prognosis, the disease may prove fatal from blood loss as were cases reported by Kelly, Legg, Chiari, Phillips and Gottheil. When this catastrophe has occurred it has been in the period of middle life or later. Many patients live their allotted span of years.

The treatment is rather unsatisfactory. Transfusion is only of temporary benefit and after a week or ten days does not seem to reduce the number of hemorrhages. Drugs and sera given to increase the coagulation of blood are of no value. The most satisfactory form of treatment has been cauterization of the telangiectases and nasal sub-mucous resection has been reported as giving good results. Electro-coagulation has also been favorably reported upon.

The following is a history of the patients seen:

#### CASE I. Mrs. H., age 54.

Family History—Mother and maternal uncle suffered from epistaxis and had "Spots" on the face, lips and tongue similar to those shown by the patient. One sister also and oldest daughter and son suffer from nose bleeds and have "Spots" on mucous membrane.

Personal History—Nose bleeds for 20 years. "Spots" first noticed about the same time. Smallpox, pneumonia and "heat stroke" in childhood. Dizziness and headache and shortness of breath for eight years.

Present Illness—Patient was seen on account of syncope as an emergency late at night. Physical examination, a rather obese middle-aged woman, lying unconscious on the floor, pale and sweating, skin of the face showed telangiectases, lips pale with several telangiectases, mucous membranes of the mouth, pharynx, conjunctiva and lobe of right ear showed telangiectases, right nostril plugged with clotted blood; lungs normal; heart sounds distant, rate 130, systolic murmur at the apex; blood pressure 90/70; abdomen fat, soft, skin showed two telangiectases, upper extremity, telangiectases under nail of right thumb and on left index finger tip. Legs slight edema of ankles.

On returning to consciousness patient complained of nausea and was tender over the gall bladder and spleen, neither of which was palpable.

Next day patient was removed to hospital, transfusion of 500 c.c. of blood done by direct method with immediate benefit. There was no reaction following transfusion. For six days the patient ran a temperature between 99 and 100, which was probably due to an acute bronchitis.

The following special examination and laboratory work were done:

Stool Examination—On three different occasions were negative for blood and parasites.

Blood Chemistry—Normal.

Urine Analysis—Spec. gravity 1.018; 1.016; 1.010; sugar—neg.; albumen, trace at one of three examinations. Microscopic, few squamous cells.

Proctoscopic examination—Small internal hemorrhoids, no bleeding.

Gastro intestinal X-Ray series—Showed no pathology.

Rhinologist reported telangiectases at anterior end of both nasal cartilages.

Blood examination—H.B. 40%, W.B.C. 4,000; R.B.C. 3,000,000.

Smear, R.B.C. slightly paler than normal, moderate anisocytosis, minimal poikilocytosis, no punctate or diffuse basophilia; one normoblast seen.

W.B.C.—No leucocytosis or eosinophilia pigmented leucocytosis, or immature forms.

Differential W.B.C. count—200 cells.

Polymorphonuclear neutrophils..... 65.0%

" eosinophiles..... .5%

" basophiles..... .5%

Lymphocytes..... 29.5%

Transitionals..... 2.5%

Large Mononuclears..... 1.0%

Unclassified..... 1.0%

Platelets—Normal in size, appearance and number. Parasites—None seen.

CASE II. Mrs. —, age 60 (sister of Mrs. H.). Epistaxis "for years." Telangiectases on septum, lips and tongue, no hemophilia symptoms. Patient was not cooperative and further history was not attainable.

CASE III. Mrs. A. (daughter of Mrs. H.), age 27. Epistaxis occasionally since 19 years of age coming on at any time and for no known reason. One child, living and well, no abnormal post partum bleeding. History otherwise negative.

Examination shows minute telangiectases on septum and two on lower lip, tip of tongue and under nail of right thumb.

CASE IV. Helen H. (daughter of Mrs. H.), age 29, complains of fatigue and weakness, has had epistaxis since "a little girl" bleeds profusely for seven days at menses, exhausted afterwards.

Examination—Thin pale young woman with telangiectases on tongue, lips and nasal septum, also one on the sternum and skin of epigastrium.

CASE V. Howard H. (son of Mrs. H.), age 34. Moderate epistaxis four or five times a year since childhood, these hemorrhages are tending to become rather more frequent.

Examination—Telangiectases on right side of septum, otherwise negative.

#### SUMMARY

1. Multiple Hereditary Telangiectasis seen in five members of one family. Two other members (mother and maternal uncle) of Case I were also affected but were not seen.

2. A survey of the literature shows that 35 families have been recorded up to February, 1926, this making the 36th family.

3. Etiology other than heredity unknown.

4. Treatment unsatisfactory, even cautery, which is best.

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## MEDICAL PROGRESS

### PROGRESS IN PSYCHIATRY

BY ISADOR H. CORIAT, M.D.

PROGRESS in psychiatry during the last year has been particularly fruitful and significant, especially along the lines of post-encephalitic behavior disorders, the more precise formulation of Schiller's disease (probably an infantile form of encephalitis, accompanied by multiple sclerosis, visual and mental disturbances), the studies of Plaut and the late Professor Kraepelin on paresis among Negroes and Indians, the further development of Kretschmer's correlation between physique, character and certain types of mental disease, the publication in English of Pavlov's complete work on the physiological activities of the cerebral cortex by means of the conditioned reflexes and finally the dynamic or psychoanalytic interpretations of manic-depressive insanity and paresis, as exemplified in the work of Abraham and Ferenczi. From the mass of psychiatric material, there has been selected only those contributions which are of more practical value, as the purely technical publications would interest only the specialist in psychiatry.

#### HYSTERIA

In a previous "Progress in Psychiatry" (1926), there was given a brief summary of Kretschmer's stimulating work on the attempted correlation between character types and the physical configuration of the body. Kretschmer has now investigated the problem of hysteria, which appears in a monograph translated by Dr. O. H. Boltz (*Nervous and Mental Monograph Series*, No. 44). It is impossible to give more than a superficial outline of this interesting volume, as it discusses in great detail so many of the hysterical reactions and symptoms.

In fact, the work is not a clinical treatise on hysteria, but is rather an investigation of hysterical reaction-types, in an attempt to correlate the most fundamental ideas of modern research on hysteria, those of Kraepelin and Freud, with the author's own investigations. The problem of hysteria is very old, in fact, to understand hysteria, is to understand a great part of the history of medicine. The modern theories of hysteria began when physicians became convinced that hysteria was not a clinical syndrome,

as emphasized in the older psychiatry and neurology, but was a form of reaction. According to this viewpoint hysteria is an abnormal way of reacting to certain life situations, or, as the reviewer prefers to express it, a childhood reaction to an adult situation. It becomes then a psychogenetic reaction-type, manifested clinically by certain symptom-groups, such as convulsive attacks, stupor, twilight states, tremors, tic-like twitchings, paralyses, muscle spasm, sensory disturbances, as well as certain manifestations in the reflex and vegetative apparatus. The line of development taken by the advancing conceptions in hysteria, shows that the symptoms arise from the deeper and more primitive strata of the mind, namely, the unconscious. They thus lie prepared in every person. In severe traumatic experiences, such as war or earthquake or following accidents in civil life, not only the immature, but occasionally every person develops panic, hysterical and flight neurotic reactions, just because everyone carries within him the old instinctive forms, but which are more or less veneered by the younger characterological and cultural layers.

According to the present conception, such psychogenic reaction-types are preëminently termed hysterical. Such reactions are characteristic of the entire human race and may take the form of panic, childish behavior, clouding of consciousness or stupor, the latter termed by Kretschmer the "sham-death reflex," which has a close relationship to cataleptic and hypnotic phenomena. Hence the hysterical symptoms are related to the normal human-reaction as instinct is to intellect. Hysteria is an attempt at freedom, a flight from a disturbing situation and has as its basis a conflict of erotic experiences or fantasies.

The monograph then discusses in turn the impulsive life of hysterics, their habit formation, the will power of hysterics and finally the transformations of experience. The latter are important, as the hysterical reaction is often a defense against inner experiences, which are re-animated and dramatized in the hysterical attack itself, as witness the class-

ical French descriptions of "grande hysteric." These attacks may be convulsive, a twilight state or stupor, but at any rate, the repressed complexes are retransformed and displaced, so that often they become a mere caricature of the original experience. A periodic revival of these experiences, precipitated by external circumstances or internal conflicts, releases the hysterical reaction. Under these conditions, as a flight from reality or a defensive mechanism, the hysterical reaction assumes the form of regression into childhood (infantilism), or a pretense to be stupid (stupor) all of which, are not accidental, but bear a definite, causal relation to the conscious and unconscious mental life. From all this it can readily be seen how Kretschmer's work substantiates the psychoanalytic conception of the polymorphous symptoms and unconscious motivation of hysteria.

#### PUERPERAL PSYCHOSES

This paper ("A Study of Psychoses occurring in Relation to Childbirth" by Drs. Elizabeth Kilpatrick and H. M. Tiebout, *American Journal of Psychiatry*, Vol. VI, No. 1, July 1926), is a report of a group of cases of mental disorder associated with childbirth which were admitted to the Bloomingdale Hospital between the years 1911 and 1923. The study was made in an attempt to determine whether or not a specific psychosis occurs in the pregnant and post-partum state and if the childbearing itself influences in any particular manner the symptoms and prognosis of the usual clinical entities of the psychoses. The cases in which a psychosis had existed prior to conception were excluded; only those cases were chosen, with one exception, where the psychotic onset occurred during gestation, labor or four months post-partum. The following conclusions were drawn from this study:—

"1. From our series of 72 cases, we found no psychosis peculiar to childbirth.

"2. The various types occurring at this time appear to be essentially the same as psychoses occurring at other times.

"3. In our series 32 per cent. were deliria, 50 per cent. manic-depressive psychoses, 14 per cent. dementia praecox, 4 per cent. psychoneuroses.

"4. (a) Fifty-two per cent. of the deliria were without discoverable toxic factors.

(b) The duration of the toxic cases was longer than expected.

(c) Seventy-five per cent. of the manic-depressive psychoses were depressed; 17 per cent. manic; 8 per cent. circular.

(d) Among the depressions were a number with the element of confusion which was found to be more frequent in those with an accompanying physical factor. The prognosis did not seem to be altered.

(e) All the dementia praecox group were of paranoid reaction.

"From our studies, it would seem that childbearing presents many problems of a physical and psychical nature which play a definite role in the production of psychoses. They do not of themselves however, determine the type of reaction but merely act as exciting or precipitating agents in the onset of the illness."

In general psychiatric experience, the reviewer can agree with the first of these conclusions, although for years the vague term of "puerperal mania" had figured in obstetrical work. Many of the puerperal and post-puerperal cases assume the form of stupor, either of the malignant (schizophrenic) type, or of the benign (manic-depressive) type. It is sometimes extremely difficult even on prolonged observation, to make a definite diagnosis, which is so very important for the future of the patient and the family relationships. Of course, a review of the personality traits antedating the onset of the psychosis is very helpful, but the difficulty frequently lies in differentiating between a negativistic stupor which is characteristic of schizophrenia with its bad prognosis, and a negativistic episode in a benign stupor, where the prognosis for recovery is good, because of less devastation of the personality.

#### NEUROPSYCHIATRIC ASPECTS OF CHOREA IN CHILDREN

The material for this paper by Dr. Franklin G. Ebaugh (*Journal of the American Medical Association*, Vol. 87, Oct. 2, 1926) consisted of thirty-two school children referred by teachers to an out-patient clinic. The cases were typical and with a few exceptions, all were mild in degree. The author investigated the mental aspects accompanying or following the chorea, its causal factors and the problems of treatment. He draws the following conclusions. The mental symptoms consisted of emotional lability and extreme fatigue associated with characteristic behavior disorders similar to those encountered in other organic conditions, such as encephalitis and the post-traumatic group. Etiologic factors seemed to point clearly towards toxic and infectious agents. Following removal of the cause, choreiform twichings may continue as a habit and should have treatment from a psychiatric standpoint. Hereditary influences were found to be very marked in this series. Treatment consisted of rest, isolation, removal from school, efforts to install self-confidence and the avoidance of discussions and over-sympathy by the parents.

#### THE PUPILS IN DIAGNOSIS

As a result of investigations in various types of coma, Dr. William C. Menninger (*Journal of Nervous and Mental Diseases*, Vol. 65, No. 6, June 1927) draws the following conclusions:—

The pupillary status, including equality, size and reaction to light was observed in 225 cases of complete coma. The following conclusions were drawn. In alcoholism the pupils showed too great a variation (inequality, contraction, fixed), to be of much diagnostic importance. In diabetic coma also, there was no uniformity in the findings, although two cases in which fixed pupils occurred, terminated fatally. In uraemic coma, there was a variation in the size of the pupils, but the light reflex was impaired in varying degrees in every case. In cerebral hemorrhage, the pupils were unequal, the dilated pupil usually occurring in the side corresponding to the hemorrhage. In nearly half the series of cerebral hemorrhage, the pupils were entirely fixed and in other cases, distinctly sluggish. In carbon monoxide poisoning, there was a marked variation in the size and reaction to light. In cases of fractured skull, inequality of the pupils occurred in over one-third of the cases and in 81% of these cases, it seemed that the dilation occurred on the side of the brain trauma. This inequality was fleeting in many cases. Pupillary fixation was found to be relatively common in all cases of skull trauma.

#### PROGNOSIS IN SCHIZOPHRENIA

As a contribution to prognosis in psychiatry, particularly in schizophrenia (dementia praecox), Drs. Edward A. Strecker and Gordon F. Willey (*Journal of Mental Science*, January 1927) conducted an investigation on a group of cases and drew the following conclusions.

"1.—Thirty-eight cases diagnosed as dementia praecox, but terminating in recovery, were analyzed from the standpoint of potential prognostic indications occurring either before or during the attack of mental disease. The chief considerations were race, history, both familial and personal, personality, prepsychotic somatic state, precipitating situation, onset, and the psychic and physical phenomena of the psychosis itself.

"2.—Racial or ancestral traits do not determine to any significant extent the presence of symptoms which bear a malignant aspect, although clinical error may result from our inability to gauge correctly and to interpret habitual modes of reaction in an alien or unfamiliar people.

"3.—Heredity occasionally exerts an indirect effect, and the previous existence of chronic mental disease in a parent may apparently create an environment from which a benign psychosis in the offspring may take some of its unfavorable symptomatological aspects.

"4.—A close study of the personality is often fruitful and furnishes helpful prognostic guides. It is important to differentiate between a basic and constitutionally seclusive make-up, and one in which the withdrawal from socialization constitutes for the individual a somewhat logical

defence and protection against definitely inimical surroundings. Catatonic manifestations during the psychosis may be occasioned by the reappearance of deeply ingrained dispositional "stubbornness." Abnormality of personality in itself is not pure evidence of chronicity, and a psychosis which seems prognostically unfavorable may be given, falsely, such an appearance by determining pre-psychotic idiosyncrasies of character. If the psychosis is in some sense an evolution of such peculiarities and no deterioration of personality is implied, the outlook is not necessarily hopeless.

"5.—Rarely sensory deprivation due to organic disease may influence the behavior during the psychosis so that it seems bizarre and malignant, unrelated to affect. In reality this reaction may be the result of organic handicaps or defects which prevent emotional expression from reaching the surface in a recognizable and understandable form.

"6.—The precipitating situation needs to be considered in regard to its intrinsic seriousness, its somatic and psychogenic elements, its acuteness or chronicity and the possibility of its correction. If the precipitating situation is innately significant and the psychotic content reflects its component factors then the psychosis may be benign even though the symptoms in themselves have a somewhat sinister aspect. It is possible that strong affective features in the precipitating situation may condition the occurrence of seemingly affectless catatonic phenomena in the psychosis.

"7.—The transition stage from reality or sanity to unreality or mental disease is an extremely critical period. Inhibition is decidedly lessened, and extraneous, accidental happenings may be deeply impressed and later elaborated into apparently malignant symptoms. Other things being equal, an acute stormy onset is a favorable prognostic sign.

"8.—An affective display which is markedly at variance with the remainder of the psychotic content (the ideation and the behavior) or a notable insufficiency of affect ordinarily constitute criteria of chronicity. Prognostically however, it is important to distinguish between the psychosis in which the emotional disharmony or paucity results from the unfolding of a fundamental disease process, and the one in which the apparent lack of alignment and emotional inadequacy are determined by independent factors not concerned with the basic mechanism of the psychosis. Various factors may contribute to such an appearance of emotional disassociation or incompleteness. In our group of cases a childhood habit of evasion, previously determined organic deficiency, the influence of a personality steered against any display of feeling, "paralysis" of physical expression, movements, etc., served to modify or distort the affective display.

"9.—Toxicity or exhaustion may complicate a benign psychosis and impart to it a deteriorating guise. For instance, this may result when affective expression is masked or distorted by intercurrent clouding of consciousness. Both the pre-psychotic life and psychosis should be carefully scrutinized for evidence of infection or bodily depletion.

"10.—Catatonia has a widespread distribution and is not peculiar to dementia praecox. It may be a response to toxicity, and it then admits of a hopeful prognosis. Furthermore, it may simply be the result of an ingrained reaction pattern in a personality whose chief characteristic is stubbornness.

"11.—There are stuporose states, complete or partial, which do not meet the clinical requirements of benign stupor, and yet they need not be looked upon as infallible signs of deteriorating process. The stupor, in itself, does not furnish a safe prognostic indicator, and it must always be considered in its relations to the entire psychosis. We feel that the influence of somatic factors was not hitherto properly weighed in the delineation of so-called benign stupor.

"12.—When the psychosis as a total reaction constitutes an escape and psychotic correction of serious circumstances in life which have brought the patient to an impasse, then the prognosis may be favorable even though the clinical aspects are not promising.

"13.—Careful study, not only of the actual mental symptoms, but of all the antecedent factors which may have been influential in moulding or complicating the expression of the psychosis and their proper evaluation, should tend to reduce the margin of prognostic error."

#### PSYCHOSES IN CRIMINALS

Dr. Ben Karpman, in a paper on psychoses in criminals, (*Journal of Nervous and Mental Disease*, Vol. 64, No. 4, Oct. 1926), divides the prison reaction-types or the true prison psychoses into three major subdivisions. The paper shows the tendencies of modern psychiatry in contradistinction to the descriptions of prison psychoses as given in Nietzsche and Wilmann's "History of the Prison Psychoses," where a detailed outline is given of the multitudinous problem. In the older descriptions, much emphasis was placed on Ganser's twilight state, or the prison psychoses were considered from the standpoint of Kraepelin's conception of dementia praecox and finally from the standpoint of ideas on degeneracy. The classification is as follows:—

"A.—The More Predominantly Schizophrenic Reaction-Types.

Although affect disturbance is regarded by us as forming the distinctive feature of true Prison Psychoses, in a large number of these, a distinct schizophrenic trend is often observed

which may even obscure the fundamental groups:

"1. Malingering reaction, including malingering psychoses which we feel we are justified in regarding as a distinct clinical entity.

"2. The situation psychoses proper. This includes such reactions as acute panics, paranoid states, confusional and catatonic reactions, etc.

"3. Regressive prison psychoses. There are psychoses which although having all the earmarks of a reaction of the environment, have, nevertheless much in their symptomatology that is of a regressive nature, by reason of which they bear a large resemblance to the endogenous reactions such as dementia praecox. It is particularly this type of reaction that was formerly often classed under the heading of Degenerative Prison Psychoses.

"B.—The More Predominantly Affective Reaction-Type.

In this group the display of affect is so overwhelming as to be practically the only presenting feature and thus give us so close a picture of a pure affect disturbance as to simulate the manic-depressive psychoses from which, however, it differs in some very fundamental respects.

"C.—The Psychoneurotic Reaction-Types.

These are situational reactions which employ for their manifestation hysterical or neurotic mechanisms, such as amnesia, mutism, etc."

#### THE PSYCHIC EFFECTS OF INTOXICANTS

This contribution by Dr. Sandor Rado ("The Psychic Effects of Intoxicants. An Attempt to Evolve a Psychoanalytic Theory of Morbid Cravings," *International Journal of Psychoanalysis*, Vol. VII. Parts 3-4. Oct. 1926) represents so far as can be determined, the first effort to determine the exact psychological basis for the mental effects of alcohol and various narcotics. As the author states in outlining his problem:—

"Intoxicants are substances varying very greatly in origin and chemical peculiarities (alkaloids, substances of the alcohol-group, etc.) which, when resorted to either occasionally or habitually, have stupefying, stimulating or exhilarating effects on the mental life. Pharmacology has conducted more or less exhaustive researches in connection with the influence of these substances upon the organic functions of body and mind and gives us some information with regard to the specific effects produced by intoxicants according to the manner and the quantity in which they are employed. Nevertheless, these investigations have only a rough (statistical) validity; we are quite unable to predict with any certainty how a given individual will react to an intoxicant. Pharmacology gives this fact due consideration by postulating a 'constitutional factor.' According to Lewin every individual has his own peculiar 'toxic equation'; this, however is composed of elements

of which we know nothing and which elude the investigations of the pharmacologist."

Because of its complicated theories, the author's conclusions are very difficult to abstract, but he has given a table for the purpose of making it easier to grasp the relations he is describing. According to this table, the psychic effects of intoxicants may be divided into two major groups.

The author feels that this table will answer a most important question—that is, after the drug has been first taken purely for medical purposes, what is it in a man's mind which oversteps the boundary between 'help' and 'pleasure', or what is it which first of all leads him to resort to drugs with the intention of procuring gratification?

A.—The help rendered by intoxicants, either as (a) a protective shield against stimuli from within, that is, their analgesic, sedative, hypnotic and narcotic effects, and (b) for their stimulating effects, to promote the functions of the ego. Thus in both these instances, the intoxicant is used for internal relief.

B.—The use of intoxicants for the pleasure derived, that is, their intoxicating effects.

The author then goes on to show that the drug addict's mental life is represented by the formula:—desire for intoxication, intoxication, after effects, etc. The whole mental personality, together with the drug, then represents an autoerotic pleasure apparatus. The ego becomes completely subjugated and devastated, the outside world is ignored, conscience disintegrated and the drug becomes the sole piece of reality in which the subject has any interest.

#### PSYCHOSEXUAL IMPOTENCE

Psychosexual impotence with the various phobias, is probably one of the most frequent and at the same time one of the most distressing of psychoneurotic disorders. The cause can be traced, if organic factors are eliminated, to various repressions and fixations dating from early childhood, and the difficulty itself is usually precipitated by actual circumstances or situations in adult life. From the psychotherapeutic standpoint, these cases can be cured or ameliorated either with extreme ease or extreme difficulty. In the former instance, assurance or advice coupled with complete abstinence for a definite period, may restore the potency which has been temporarily lost. In the latter group, only prolonged psychotherapeutic treatment (psychoanalysis) can produce curative results through removing the repressed and unconscious causative agents.

In the third Vienna (1926) edition of his book on the psychical disturbance of male potency, Dr. M. Steiner has amplified his previous work, again emphasizing that a complete understanding of the causes and treatment of psychosexual impotence cannot be made intelligible without understanding the psychoneuroses

themselves. He divides his cases into three categories, viz:—

1. Those with constitutional factors, in whom there is an organic inferiority from birth. In these cases the prognosis is unfavorable.

2. Cases in which the etiological factor can be traced to the earliest period of childhood. The prognosis with treatment in this group is usually favorable.

3. Cases in which causative factors can be traced to a later period of life. In this group also there can be demonstrated etiological factors from early childhood. In these cases, the prognosis is also favorable.

In the two latter groups of cases, the author advises the psychoanalytic method of treatment, in order to unearth and bring to consciousness the disturbing factors during the early period of life but which for years have been repressed in the unconscious.

The reviewer's experience with such cases, coincides with Steiner's recommendations, particularly from the standpoint of favorable outcome therapeutically.

#### PRECIPITATING FACTORS OF SCHIZOPHRENIA

In a long paper written from the dynamic or psychoanalytic viewpoint, (*Journal of Nervous and Mental Disease*, Vol. 64, Nos. 5-6 Nov., Dec. 1926), Dr. Oswald H. Boltz, undertakes a detailed study of some factors which determine a schizophrenic reaction in males. The term schizophrenia which is synonymous with the older designation of dementia praecox as described by Kraepelin, was devised by Bleuler. It describes the most characteristic reaction of this disease, namely a splitting of the various psychic functions or of the ego into its components, with a regression to primitive or archaic thought processes, all expressed on the usual clinical manifestations of the disease (hallucinations, postures, stupor, pantomime, etc.). The disease follows a chronic course, but it may also manifest itself in thrusters or episodes, which may halt or reach a stationary point at any stage or may recede, but on the whole the prognosis is very dubious, probably never leading to a complete recovery or mental integration. The basic symptom is a dominance of phantasy over reality, a tendency to shut off the external world of reality, termed autism or autistic thinking.

From a study of his cases the author feels justified in concluding the schizophrenia, like other neuroses and psychoses, usually has a definite precipitating factor or situation, the latter possessing a psychological significance in relation to repressed complexes in the unconscious. Such a precipitating factor occurring in the outer world of reality may be an actual situation related to repressed ideas and impulses or a symbolic situation of some sort which is also in apparent connection to repressed material or there may be merely a vague relationship which can only be appreciated by one who has had ex-

perience with the psychology of the unconscious. A homosexual setting in the environment which offers gratification in a passive form in the unconscious, or even suppressed homosexual impulses, is the most common cause of schizophrenia in males.

#### LEGAL ASPECTS OF PSYCHIATRY

At the eighty-third Annual Meeting of the American Psychiatric Association, held in Cincinnati, Ohio, during June 1927, the Committee on the legal aspects of psychiatry, presented its recommendations and revised report. (*American Journal of Psychiatry*, Vol. VII. No. 2 Sept. 1927.) This report was grouped under three headings, viz.—theoretical considerations, summary of the theoretical position of psychiatry and practical recommendations. The psychiatric attitude towards criminals and offenders and the practical considerations were summarized as follows:—

"The modern psychiatric position holds:—

"1. That the psychiatrist's chief concern is with the understanding and evaluating of the social and individual factors entering into failures in human life adaptations.

"2. That crime is a designation for one group of adaptation failures, and hence falls definitely within the focus of psychiatry, not excluding, of course, certain other branches of science.

"3. That those who commit crimes are proper subjects for scientific study and analysis with reference to their anti-social propensities.

"4. That this study includes a consideration of the hereditary, physical, chemical, biological, social and psychological factors entering into the personality concerned throughout his life as well as (merely), in the specific "criminal" situation.

"5. That such study makes it possible in many cases to direct an attack upon one or more of the factors found to be active in a specific case to effect an alteration of the behavior in a propitious direction, while in other cases it is possible to foresee probabilities in the light of past experience and discover laws to a degree sufficient to make proper provision against subsequent and further injuries to society. By the same experience and laws it is possible in still other cases to detect and endeavor to prevent the development of potential criminality.

"6. That these studies can be made effectively only by those properly qualified i. e. scientists who have made it their life interest and study to understand and treat behavior disorders.

"7. That this point of view leads us to favor certain radical changes in legislative enactment and legal procedure and penal practice, incorporated in the recommendations cited below, with idea of individual diagnosis and treatment (painful or otherwise) substituted for the idea of retributive punishment without individualization.

"8. The effective preventive medicine is applicable in the field of psychiatry in the form of mental health conferences and examinations, child clinics, mental hygiene clinics, lectures and literature, and similar institutions and efforts.

"9. That the program outlined for the scientific solution of the problems of crime should provide for:

(a) The protection of society.

(b) The rehabilitation of the "criminal" if possible.

(c) The safe and useful disposition of detention if rehabilitation seems impossible.

(d) The detection and the prevention of deflection of the development of criminality in those potentially predisposed.

#### PRACTICAL RECOMMENDATIONS

The committee respectfully recommends that The American Psychiatric Association pursue the following program:

"A. That the Association should do the following things:

"1. It should coöperate with the National Research Council, with the National Committee for Mental Hygiene, with the American Medical Association, with the American Bar Association, the American Orthopsychiatric Association, and with the American Institute for Criminal Law and Criminology in further work on this problem.

"2. It should set up, agree upon and publish official standard qualifications of court psychiatrists and psychiatric expert witnesses, and coöperate with the American Psychological Association, and the American Association of Psychiatric Social Workers in the preparation of similar official standard qualifications for psychologists and social workers attached to court psychiatric clinics.

"3. It should at the annual conventions, give more attention to psychiatry as applied to crime and other behavior disorders including demonstrations of practical work being done.

"4. It should foster an attack on certain pressing problems of research in this field, particularly the working out of a useful nosological classification of mental disorders which will take into consideration behavior pathology not now definitely defined or classified from a psychiatric standpoint.

"B. That the American Psychiatric Association should advocate:

"1. Types of legislation such as the recent Massachusetts enactment and the expert testimony bill of the American Institute for Criminal Law and Criminology which put the psychiatrist in a position of counselling the legal authorities as to the disposal of social offenders, implying the development of the necessary machinery (clinics, court psychiatrists, etc.).

"2. The following proposals of the American Institute for Criminal Law and Criminology with respect to trial procedure.

(a) That the disposition and treatment (including punishment) of all misdemeanants and felons, i.e. the sentence imposed, be based upon a study of the individual offender by properly qualified and impartial experts cooperating with the courts.

(b) That no maximum term be sent to any sentence.

"3. The release of prisoners upon parole or discharge only after complete and competent psychiatric examination with findings favorable for successful rehabilitation, to which end the desirability of resident psychiatrists in all penal institutions is obvious. (Practically identical with another of the proposals of the American Institute for Criminal Law and Criminology.)

"4. The permanent legal detention of the incurably inadequate, incompetent, and anti-social offenders irrespective of the particular offense committed, and the development of the assets of this permanently custodial group to the point of maximum usefulness within the prison milieu, industrializing those amenable to supervised employment, and applying their legitimate earnings to the reimbursement of the persons injured by their criminal activities.

"5. The court appointment from a qualified list, of the psychiatrists testifying in regard to the mental status, mechanisms or capabilities of a prisoner with opportunity for thorough psychiatric examination using such aids as psychiatrists customarily use in practice, clinics, hospitals, etc., with obligatory written reports and remuneration from public funds.

"6. The elimination of the use of the hypothetical question and the terms, "insane" and "insanity" and "lunacy" and the exemption of the psychiatrist from the necessity of pronouncing upon concepts of religious and legal tradition in which he has no authority or experience, such as "responsibility," "punishment" and "justice".

"7. In the codification of the commitment laws of the various States, "Insanity" has come to mean nothing but certifiability i.e. the social desirability of enforced hospitalization. It seems quite unnecessary to have a score of different methods for determining the basis of this step.

"8. The teaching of course in criminology in both law schools and medical schools by persons trained in both criminal law and criminal psychiatry."

#### FIRST STEP IN MASSACHUSETTS CANCER PROGRAM

Under this title the State Department of Health has issued a reprint of the addresses which were delivered at the opening exercises of the Pondville Cancer Hospital. With these reprints a circular is enclosed which gives the facts with respect to the operation of this hospital, a copy of which is appended.

#### PONDVILLE HOSPITAL, WRENTHAM, MASSACHUSETTS

*Location.* The Pondville Hospital is located in the township of Norfolk on the Boston-Providence Turn-

pike between Walpole and Wrentham. Post office Wrentham, Massachusetts. Telephone Walpole 386.

*Methods of admission.* Application blanks must be filled out by a registered physician. Blanks may be obtained at the Hospital; at 546 State House, Boston; from local overseers of the poor; or local board of health. A member of the Department Staff will visit each case before admission.

*Type of patients admitted.* In order that the limited resources of this hospital may be used to the greatest advantage it must be reserved for cancer and suspected cancer of all types that cannot be otherwise adequately cared for.

*Rates.* Hospital charges to cities and towns for patients sent to the Pondville Hospital is \$2.50 per day. The charge for patients paying their own fees is \$1.50 per day. No additional charge is made for service or treatment. (These rates are but a fraction of the actual cost of maintenance.) Outpatient charges: Diagnostic services free. Treatment charges will be based on cost of service.

*Service available.* Diagnostic, Surgical, Therapeutic, Radium, X-ray (diagnosis and treatment), Medical and Nursing. Outpatient clinics for diagnosis and treatment on Thursday afternoon at 1 P. M.

*Transportation.* The hospital can be reached by the New England Transportation Company buses; leaving Park Square, Boston, on the hour. Fare from Boston is ninety cents. The N. Y., N. H. & H. Railroad runs two trains daily from the South Station, Boston, in the afternoon. The fare is eighty-six cents. There are no return trains in the afternoon. The railroad station for visitors is Pondville and for patients, Walpole. Patients will be met at the Walpole station if the hospital is notified a day in advance. Automobiles take State Highway from Boston to Providence, U. S. Route No. 1. Hospital is situated between Walpole and Wrentham.

*Visiting hours.* Patients may be visited from 2-4 and 7-8 P. M. every day except Monday and Thursday afternoons. In exceptional cases other arrangements may be made with the Superintendent.

*Hospital capacity.* The hospital has a capacity of about 90 beds. Thirty of these are for ambulatory patients.

*Information.* Additional information may be obtained by addressing the State Department of Public Health, 546 State House, Boston, or the Pondville Hospital, Wrentham, Massachusetts.

#### ENLARGED MEDICAL DEPARTMENT FOR THE ARMY

General Ireland has reported an increase in the incidence of all groups of diseases in the army for the year ending June 30, 1927.

The annual rate of admissions for diseases for one thousand was 561.86 for this year as compared with 518.04 for the preceding year.

The number of officers authorized for the medical department of the army is 1039 which is regarded as insufficient. In the air corps alone a considerable increase in the department is needed.

It must be recognized that the wide distribution of the army in far distant countries like the Philippines, Hawaii, and Porto Rico as well as in many sections of the United States requires more medical officers than would be needed if the troops were all together. The number of deaths and discharges for disabilities has slightly increased.

The total number of days lost by the military personnel was 1,559,763 of which 277,913 days were due to injuries.

There has been a uniform decline in the incidence of venereal diseases since 1917 with the exception of 1920.

No deaths were reported from smallpox.

The report contains many interesting statistics.

**Case Records  
of the  
Massachusetts General Hospital**

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN  
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

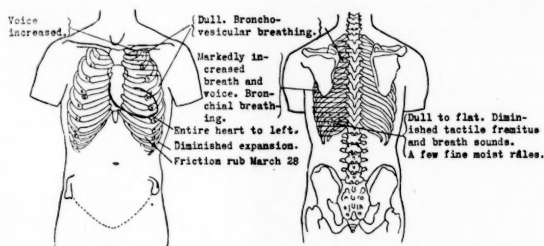
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13511

**THREE MONTHS' COUGH WITHOUT  
EVIDENCE OF TUBERCULOSIS**

MEDICAL DEPARTMENT

A Scotch-Irish bleacher forty-one years old entered March 26 complaining of cough of three months' duration. He seemed dull and sleepy, as if under the influence of a sedative, and be-



came confused on chronology. His story is not too reliable.

He had never been strong, had always been "nervous." Three months before admission he went to a doctor for a burning "soreness" halfway between the umbilicus and the symphysis pubis, worse after eating, accompanied by gas, somewhat relieved by food, cold water and soda. Under medical treatment the symptoms ceased in two weeks. For three months he had used two pillows at night and had had palpitation on exertion. Recently he had slept as much as eighteen hours a day. His physician found that the patient was losing ground and advised hospital treatment. Soon the cough, which started as a dry hacking about five months before admission, became worse. During the past week it had become much worse. A month before admission the slight phlegm which he had raised turned to thick yellow foul smelling material amounting sometimes to as much as a cupful a day. He stopped work because of weakness. In three months his weight had fallen from 112 pounds to 88. For two months his appetite and strength had been failing. He was shaky on walking, and his hands trembled. At admission he could hardly walk at all. For the past week the dysp-

nea and cough had been much worse. He had not had nausea or fever.

His father died at thirty-five of "inflammation of the stomach." There was no history of familial disease.

The patient had scarlet fever in childhood. For fifteen years he had had varicose veins. Twelve years before admission he had an abscessed tooth incised. He had frequent head colds.

Clinical examination showed an emaciated man with pale skin and mucous membranes. Many teeth missing, the remaining ones carious. Marked pyorrhea. Lung signs as shown in the diagram. The patient was very tired from examination in the Out-Patient Department and apparently could not breathe properly. Cervical, axillary and left inguinal adenopathy. Apex impulse of the heart 9 centimeters from the left of midsternum, coinciding with the left border of dullness 2.5 centimeters outside the midclavicular line. Rate rapid. No murmurs. Pulses

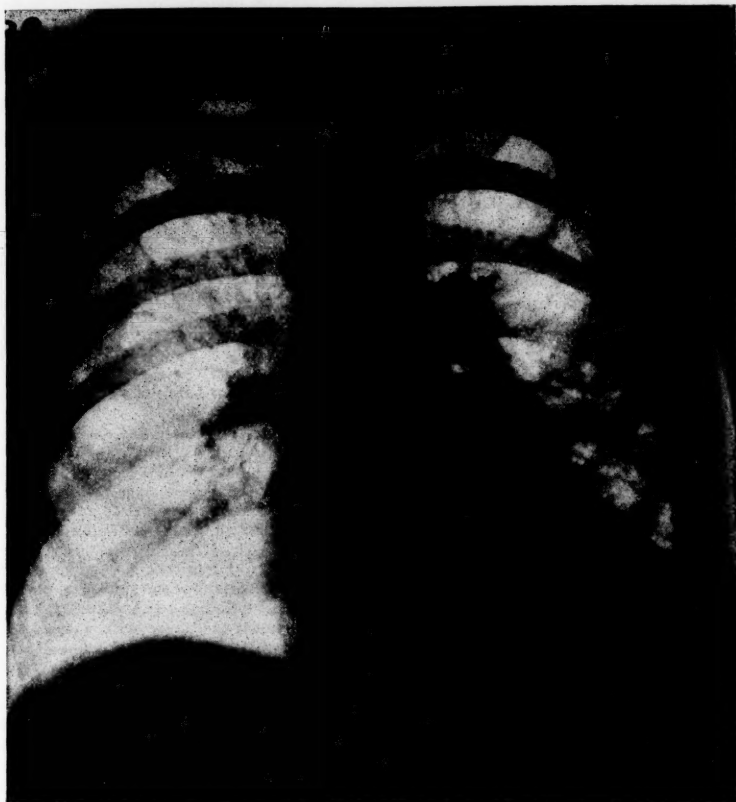
and arteries normal. Blood pressure 100/75? Rectal examination negative. Abdomen negative. Suggestive clubbing of fingers. Reflexes hyperactive. Pupils equal, regular, small and did not react. Fundi normal.

Urine normal in amount, cloudy at one of two examinations, neutral at one, specific gravity 1.025 to 1.023, a slight trace to a trace of albumin at both examinations, sediment negative. Renal function 35 per cent. Blood 5,200 to 12,000 leucocytes, polynuclears 70 per cent., reds 4,030,000 to 2,500,000, smear normal. Wassermann negative. Non-protein nitrogen 30 milligrams. Sputum purulent. No tubercle bacilli at 6 examinations. Smith stain March 28 showed numerous leucocytes, a large variety of microorganisms, predominantly Gram-negative bacilli, frequently intracellular. Fontana stain showed many Vincent's spirochetes. March 31 Smith stain showed numerous leucocytes containing various numbers of short Gram-negative bacilli. Frequent rosettes of columnar epithelial cells with a central core of bacteria. April 1 numerous pus cells, influenza bacilli and Vincent's spirals and bacilli. Stools, guaiac negative. Widal slightly positive for bacillus typhosus, negative for paratyphoids A and B.

Temperature septic, 100.4° to 103.5° rectal until April 3, then 98.4° to 102°; daily afternoon rise throughout. Pulse 99 to 148. Respirations 24 to 40 with an increase to 72 the day before death.

X-ray showed the diaphragm high on the left

side. The heart was not displaced. The apices were clear. The hilus shadows on the right were moderately increased. A few dense glandular shadows were present. The diaphragm on the right was sharply outlined and moved normally with respiration.



Shows the diaphragm high on the left side, its outline indistinct. The costophrenic sinus is obliterated. There was no respiratory movement on this side. The greater part of the lower half of the left chest shows mottled dullness, most marked around the root of the lung along the border of the heart. The shadows are fine and quite dense. The left lung field is smaller than the right. The intercostal spaces are somewhat narrowed on this side. The heart is not displaced. The apices are clear. The hilus shadows on the right are moderately increased. A few dense glandular shadows are present. The diaphragm on the right is sharply outlined and moved normally with respiration.

side, its outline indistinct. The costophrenic sinus was obliterated. There was no respiratory movement on this side. The greater part of the lower half of the left chest showed mottled dullness, most marked around the root of the lung along the border of the heart. The shadows were fine and quite dense. The left lung field was smaller than the right. The intercostal spaces were somewhat narrowed on this

The morning of March 28 the friction rub was heard over the right lower chest anteriorly. The visiting physician found some drawing of the heart to the left, the voice sounds more intense anteriorly. The patient grew steadily worse. A laryngologist thought it was unjustifiable to put him through the ordeal of bronchoscopy in his present condition. The moisture and bronchial breathing spread upward on the left. The signs

were especially marked between the axillary lines. April 4 the left anterior chest was bubbling. The râles were palpable. Neosarsphenamin 0.1 gram was given. That night he was in collapse. The next morning he died.

## DISCUSSION

BY RICHARD C. CABOT, M.D.

## NOTES ON THE HISTORY

We always wonder what patients mean by "inflammation of the stomach." It may be general peritonitis. It may be appendicitis.

The history starts with digestive symptoms and goes on as if it might be a cardiac case. The significant symptoms certainly seem to be those connected with his cough and foul sputum. Foul sputum is a rare thing, and the evidence of it is about as valuable as any single piece of information in the realm of physical diagnosis. You know what you have every time. So that I start to read the physical examination with the distinct belief that he has an abscess or abscesses in his lung.

## NOTES ON THE PHYSICAL EXAMINATION

The diagram concerns the left lung, and I notice that the heart is pulled over to the left. We have the signs of a lung that is out of commission, without any considerable evidence of fluid, and should mean fibroid lung. But for the previous evidence of sputum one would not guess that we had anything to do with abscess. Of course we have not as yet seen that foul sputum in the hospital. I am anxious to see if it is verified.

The heart examination does not correspond very well with what was said above as to the heart being pulled to the left. It may correspond, but we do not know yet about the right cardiac border. There is nothing said about it in the physical examination.

This is an essentially normal urine. There is no reason to suspect the kidneys of anything.

With an abscess one expects leucocytosis.

The sputum was purulent, but they do not tell us how it smelt.

DR. TRACY B. MALLORY: More acrid than foul.

DR. CABOT: We can hardly say then that we have the definite evidence on which abscess rests.

"X-ray showed the diaphragm high on the left side, its outline indistinct." I am surprised that they could see it. Possibly they saw it better with the fluoroscope than in the plate.

I suppose because there were a good many spirochetes (though not the syphilitic type) in his sputum they gave him neosarsphenamin. That night, probably not as a result of that, he was in collapse, and died the next morning. That is a very small dose. I see no reason to connect it with his death.

## DIFFERENTIAL DIAGNOSIS

We know little more at the end than in the beginning. I think he has an abscess in his lung. As far as I know abscess almost always goes with a chronic fibrous process outside the abscess itself.

Six negative examinations for tubercle bacilli plus the clear apices are enough to rule out tuberculosis. You can have tuberculosis at the base in a child, but it is rare in an adult. He is emaciated as a result of sepsis. He has a secondary anemia as a result of sepsis, and that is all.

A STUDENT: Is not a lung abscess generally secondary to some cause?

DR. CABOT: Yes, we ought to find a cause and hesitate to make a diagnosis such as I have made unless we can say "lung abscess from so and so," either foreign body or cancer or general sepsis. When you do not get any familiar cause like that you generally suspect that there has been a pneumonia which instead of dissolving in the ordinary way went on to abscess. We have no suggestions in this case of any of these.

A STUDENT: Would this case suggest diaphragmatic hernia?

DR. CABOT: No, I do not see anything there that suggests it.

A STUDENT: Are there any cases of lung abscess known to follow Vincent's oral sepsis?

DR. CABOT: Very often you find Vincent's organism in lung abscess, since you find it in the mouth, but it is pretty hard to prove that the oral process has an etiologic importance in the lung.

A STUDENT: From that X-ray shadow could you make a diagnosis of carcinoma of the lung?

DR. CABOT: I do not know why we should not. X-ray often shows cancer with abscess in the lung due to blocking of the bronchus.

A STUDENT: But it would not look like that in X-ray, would it?

DR. CABOT: No. Of course I do not mean to predict lung abscess in the sense that that will be the only pulmonary lesion. He has a process involving a good part of the left lung, very probably acute bronchopneumonia with a lot of old fibrosis and probably more than one abscess. The distinction between that and bronchiectasis I do not think is important.

A STUDENT: What could he have in the right upper half of this lung, if that percussion was true? That is what turned me away from lung abscess.

DR. CABOT: You could say thickened pleura. That would account for the bronchovesicular breathing, if it is such, at the top.

A STUDENT: Did you say that the lung abscess is only a part of the process?

DR. CABOT: Yes; chronic pneumonitis with probably some acute bronchopneumonia at the end.

The diagnosis as far as I can make it would

rest on the sputum as reported before he came in and the absence of tuberculosis. But I do not know anything else that kills a man in this way with no tuberculosis and purulent foul sputum except lung abscess or bronchiectasis.

A STUDENT: Would not obstructive carcinoma give you all this coming from the upper half of the lung?

DR. CABOT: Yes. I do not know any way that you could rule out a carcinoma of the lung.

A STUDENT: How many other conditions?

DR. CABOT: I do not know of any others in this part of the world. Multiple abscesses run into each other, and if you say a bronchopulmonary infection with chronic pneumonitis and abscesses, that is all one diagnosis; tuberculosis another, carcinoma a third, foreign body a fourth. I do not know of anything else.

A STUDENT: No pleural condition?

DR. CABOT: None, except adhesions.

A STUDENT: What would be the cause of death in a case of this kind of lung abscess?

DR. CABOT: Sepsis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Bronchiectasis.

Bronchopneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Lung abscesses.

Thickened pleura.

Chronic pneumonitis.

Acute bronchopneumonia.

ANATOMIC DIAGNOSES

1. *Primary fatal lesions.*

Bronchiectasis.

Multiple abscesses of the lung.

Tuberculosis of the mesenteric glands.

Solitary tubercles of the lung and stomach.

Miliary tuberculosis of the lungs.

2. *Secondary or terminal lesion.*

Organizing bronchopneumonia.

DR. MALLORY: The picture here was an unusually complicated one, and I am not sure that we are able to explain all of it even post mortem.

Both pleural cavities showed old fibrous adhesions, and at the left base there was fresh fibrin. The trachea and bronchi were filled with enormous amounts of frothy serum. The most noticeable thing was the smaller bronchi of the left lung, especially those extending into the lower lobe, which were quite definitely dilated. The third sub-branch, for instance, of this left bronchus was as large as the left primary bronchus, that is to say approximately as large as my little finger. At the end of these dilated bronchi were groups of sacculated cavities which varied from half a centimeter to two or three centimeters in diameter and were filled with foul

material. Practically all of both lungs remained distended, that is, failed to collapse on opening the chest. Minute nodules of consolidation two or three millimeters in diameter were scattered throughout the parenchyma, that is to say a terminal bronchopneumonia. The left lower lobe was much more distended and much firmer than the others except for the very numerous cavities scattered through it.

That much I think is a fairly clear picture of bronchiectasis. But in addition, in the left lower lobe of this lung was a very definite caseous nodule; and microscopically we found fresh miliary tuberculosis. He also had old calcified tubercles in the wall of his stomach, miliary in size, about four or five calcified glands in the mesentery, and about fifteen or twenty smaller fresh caseous ones.

DR. CABOT: How big was that caseous gland?

DR. MALLORY: About a centimeter in diameter.

The other organs were essentially negative, so that it becomes a problem to decide how much of the symptoms were due to the numerous bronchiectatic cavities and how much were due to this miliary tuberculosis. The latter seemed very much less in extent than the other, but the acute infection served to mask it to a considerable extent.

DR. CABOT: Aside from this single caseous nodule it was miliary in the lungs?

DR. MALLORY: There were just a few miliary tubercles in the immediate neighborhood.

DR. CABOT: And you say some in the stomach?

DR. MALLORY: Yes, in the stomach wall and in mesenteric and retroperitoneal glands, but it was not an acute disseminated miliary tuberculosis. We found nothing in the liver, spleen or kidneys.

DR. CABOT: Was it an old process?

DR. MALLORY: Some of his tuberculosis must have been of about twenty years' duration. He must have had tuberculosis in his abdomen for a long period of time. That in his lungs seemed relatively recent.

CASE 13512

PELVIC PUS—SOURCE?

SURGICAL DEPARTMENT

A married Canadian woman forty-seven years old entered the hospital July 10 complaining of swelling in the right lower abdomen with pain.

Seven weeks before admission she had what she called "influenza"—chills but no cough, head cold or sore throat. After a week in bed her thigh became very tender on the inside from the knee to the groin and painful on moving the leg. Her physician put ice on the leg. It turned black and blue but was not particularly swollen. Later it was lanced. Since the onset of the "influenza" she had felt chilly and had

sweat a good deal. She slept very little. Since she had been in bed she said her right leg had been turned out, that the "muscles were rolled around on the leg." Four days before admission she had a very painful swelling in her right lower quadrant. At the onset it was exceedingly tender. This had steadily increased in size but at admission was less painful. She vomited the three mornings before admission. She had had to have an enema every morning since she had been in bed. The urine was scanty and dark colored. She gave a conflicting history of frequent desire to urinate and of being able to retain her urine with comfort all day.

Her father died of heart trouble. Her mother had a weak heart.

She had had diphtheria and two attacks of pneumonia, one following a goiter removal with erysipelas seven years before admission. She was formerly very active but now liked to be inactive. She preferred cold weather. A year before admission a "vein burst" on the medial side of her left leg just above the ankle. She was treated for varicose ulcer. For the past six months she had had precidentia, caused she thought by being much on her feet. At the time it occurred she had a dull steady ache, worse in the morning, on the medial surface of the right leg from the groin not quite to the knee. She could not remember how long this lasted. Her mind was somewhat confused and her memory not very good.

Clinical examination showed an obese woman with generalized pallor of the skin but with flushed cheeks and a suggestion of icterus. The skin was dry. The neck showed two well healed scars, apparently from thyroidectomy. Apex impulse of the heart not found. Sounds almost inaudible. Murmurs questionable. Pulmonic second sound accentuated. Blood pressure 105/70. The skin of the entire abdomen showed generalized subcutaneous edema, especially in the dependent portions of the flanks. In the right inguinal region was a raised, diffuse, tender, non-fluctuant swelling at the apex of which was an erosion 5 centimeters in diameter. The swelling was fixed and prevented the patient from flexing her thigh. In the medial surface of the right thigh were several smaller eroded areas and on the medial surface of the right lower leg an old discolored slightly eroded area. Pelvic examination showed a fixed smooth tender mass bulging into the right vault, lacerated perineum, leucorrhea. Rectal examination showed a fixed mass on the right as above and old healed external hemorrhoids. Pupils and reflexes normal.

Before operation amount of urine not recorded, urine cloudy or hazy at both of two examinations, red at one, specific gravity 1.015 to 1.020, the slightest possible trace to a slight trace of albumin, leucocytes at both sediment

examinations. Blood: 14,600 leucocytes, 72 per cent. polynuclears, hemoglobin 70 per cent., reds 3,632,000, smear normal. Wassermann hemolyzed.

X-ray examination of the bones of the pelvis was negative. In the right lower pelvis there was an area of increased density in the soft tissues. The medial border of this area was well defined and extended from the sacrum down toward the pubis. A chest plate was negative.

Temperature before operation 98.2° to 101.8°, pulse 83 to 109, respirations 28 to 20.

July 13 operation was done. The patient made a good ether recovery. The temperature rose to 104.4° the following day, then came down to 101.6° July 16. The pulse ranged from 100 to 128. There was profuse drainage about the wicks.

Toward the evening of July 16 the condition changed. The temperature rose again and the patient appeared toxic. The following day the temperature rose to 104°, the circulation failed and the patient died.

#### DISCUSSION

BY ARTHUR W. ALLEN, M.D.

The record does not state whether her right thigh was the one that became tender on the inside. I suppose it was.

This is obviously a very sick woman.

The slightly eroded areas in the right thigh I suppose were where the thigh had been lanced, and the lower ulcer is undoubtedly the old varicose ulcer.

The record does not state whether or not her leg was turned out in the physical examination. It simply says the leg did not flex on the thigh.

The X-ray reports mention the bones of the pelvis as negative, and describe the swelling in the soft tissue, which I think may be the line that can be seen here. No mention is made of the lumbar spine. The two vertebrae that are seen in the film certainly do not show any gross destruction.

Here we have a middle-aged woman who comes in with a seven weeks' illness. During this illness I think we may assume from the history of chills that she had been running a temperature. She had pain in her right thigh, tenderness on the inside, pain on moving her leg. The leg did not become particularly swollen, but it was lanced. She had been able to sleep very little and had apparently become quite toxic. When she came into the hospital she had this swelling in the right lower quadrant. We took it that that was above Poupart's ligament, although it is not mentioned here. By vagina and by rectal examination there was an obvious mass in the pelvis on the right. The X-ray bears that out. That probably means that we have a pelvic abscess of some sort. Pointing the way it has here, in the groin, makes one

think first of all of a psoas abscess, and with the long history that possibility seems to stand up more prominently than the possibility of either a pelvic abscess associated with an old pelvic inflammation or an abscess associated with an appendicitis. It is not impossible, I think, to conceive of an appendix abscess taking seven weeks to develop, but I believe it would be rare to have the abscess localized to the right side of the pelvis. Also I believe that the patient would have had earlier and more severe gastro-intestinal symptoms. An appendix abscess might point, but usually it does not point in the groin. It is much more apt to point higher. It may point in the flank.

The history of the onset is certainly not like that of appendicitis. So far as pelvic inflammation is concerned it is conceivable that she might have developed a pelvic abscess mainly on the right side, but there again it would be quite unusual. She would be more apt to have a collection of pus that would fill the pouch of Douglas, and if it were going to point anywhere it probably would not point in the groin but in the vagina behind the cervix. The history of proclivencia which she had for six months prior to the onset of the illness might lead one to suspect some difficulty in the pelvic organs. However, it seems to me that the woman was more ill than the average pelvic inflammation would warrant. It seems to me that the best possibility, the most likely diagnosis, would be that of psoas abscess, probably not tuberculous. If it were tuberculous the probabilities are she would not have been so ill. It would not have been so rapid in its development and it probably would have been associated with a history of some backache and pain radiating down the posterior surface of her leg. Pain radiating down the inside of her thigh goes perfectly well with pelvic inflammation.

#### DR. ALLEN'S PRE-OPERATIVE DIAGNOSIS

Psoas abscess, non-tuberculous.

#### PRE-OPERATIVE DIAGNOSIS

Appendix abscess.

#### OPERATION

Gas-ether. Incision was made in the right inguinal region over a prominent tumor mass. Subcutaneously pus was found and evacuated by means of a suction apparatus. There appeared to be at least a pint of pus of pyogenic origin and not from the colon group of bacilli. Exploration with the finger showed that the abscess cavity penetrated down into the pelvis behind the iliac vessels. Two cigarette wicks were placed to the depths of the cavity.

#### FURTHER DISCUSSION

Apparently the operator thought that this was an appendix abscess. He had the advan-

tage of a three-day observation and had examined the patient. But I am doubtful of that diagnosis. The fact that the abscess cavity was not of the colon group I think would also be against appendicitis.

#### X-RAY INTERPRETATION

The area of increased density in the pelvis may represent a large abscess.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Abscess in the inguinal and retroperitoneal nodes in the right iliac region.  
Toxic myocarditis.

#### DR. ARTHUR W. ALLEN'S DIAGNOSIS

Psoas abscess, non-tuberculous.

#### ANATOMIC DIAGNOSES

1. *Primary fatal lesion.*  
Abscess of the retroperitoneal tissues.
2. *Secondary or terminal lesion.*  
Septicemia, staphylococcus aureus.
3. *Historical landmark.*  
Arteriosclerosis.

DR. TRACY B. MALLORY: I think Dr. Allen's diagnosis is probably quite correct. At post-mortem we found an immense retroperitoneal abscess situated in and filling the entire right half of the pelvis, extending upward in the sheath of the psoas muscle nearly to the kidney, and also extending downward through the obturator foramen into the posterior portion of the thigh, into the buttock, and also into the femoral triangle beneath Poupart's ligament. So that it was rather difficult to decide whether it was an ischiofemoral abscess working upward or a psoas abscess working downward. There was an immense cavity which the pus had dissected out in all directions, and the operative incision had succeeded in draining barely a quarter of the involved cavities.

Otherwise, except for a positive staphylococcus aureus blood culture and a few pneumonic foci in the lungs, the rest of the necropsy was negative. There was pure staphylococcus aureus in the blood culture; in the abscess cavity it was a mixture of several organisms.

This most certainly was not an appendix abscess. The appendix was entirely negative.

There were no lesions of the head of the femur. The genital organs, except for the proclivencia, were negative. We were not able to find any source for the abscess other than a metastatic one, possibly from the original point of sepsis in the thigh.

DR. ALLEN: Had these wounds on the thigh—where she had been lanced—been draining pus, or could you tell?

DR. HARRY A. DEROW: They were bluish areas with ulcerated centers. At the necropsy the ulcerated centers were not draining pus, but showed a slight amount of granulation tissue. They were superficial skin lesions.

DR. MALLORY: However, those were not directly connected with the large cavity.

DR. DEROW: No, they were not. The operative wound in the right inguinal region communicated directly with the extensive retroperitoneal abscess cavity, and free pus was present in the skin incision here.

DR. ALLEN: That would be a possible focus, or the varicose ulcer might have been a focus.

DR. MALLORY: Possibly, yes.

#### THE DEATH RATE OF NEW ZEALAND

Dr. John K. Gore, Vice-President and actuary of the Prudential Insurance Company, has made a study of health and longevity throughout the world and has reported his findings at a convention of Life Insurance Presidents. He finds that New Zealand has the lowest death rate in the world and also the lowest infant mortality. Nine countries have a lower death rate than is found in the United States for children under fifteen years of age. It is generally conceded that the climate and living conditions in New Zealand are especially favorable and especial care is given to the care of women and children.

#### HEALTH CONDITIONS OF THE WORLD

Surgeon General Cumming in his annual report to Congress states that conditions were better for the year ending June 30, 1927, than for any previous year on record. A few specific facts are of especial interest and are quoted as follows:

Typhoid fever declined during the calendar year 1926, and the case and death rates for diphtheria for the year were the lowest ever recorded. This disease showed a small increase, however, during the first part of 1927. The general downward trend in diphtheria is undoubtedly the result of the use of antitoxin and toxin-antitoxin immunization.

The death rate from tuberculosis continued its decline, and heart disease, diabetes, and nephritis, which had been increasing in recent years, showed lower rates than were expected.

#### SMALLPOX LESS PREVALENT

Smallpox decreased during the calendar year 1926. In most sections of this country the disease was of mild type, but in some localities it existed in severe form. Out of a total of 30,450 cases of smallpox reported during the year from 41 States, there were 380 deaths. The disease was the most fatal on the Pacific Coast, which section reported only one-fifth of the total number of cases, but two-thirds of the number of deaths. In view of the demonstrated protective value of vaccination, the Surgeon General says that it is difficult to explain why this simple preventive measure is not universally employed.

Although endemic foci of the important quarantinable diseases continued to exist abroad, no cases of cholera, yellow fever, or bubonic plague gained entrance to the country during the year. Two cases of plague were apprehended aboardship at the United States quarantine station at New Orleans, La., and 17 cases of smallpox and two cases of leprosy were detected at domestic quarantine stations. The dis-

covery of three cases of plague among rats at Los Angeles, Calif., however, indicates that the disease continues to exist among rodents; and it persists especially among ground squirrels in certain sections of California, and requires vigilance on the part of the health authorities concerned for the protection of the human population.

#### TULARAEMIA SPREADS

The geographical prevalence of tularaemia, a disease identified a few years ago by an investigator of the Public Health Service, was discovered during the year to extend to ten additional States, increasing the area of known distribution of this new disease to 36 States, the District of Columbia, and Japan.

Rocky Mountain spotted fever is another disease being studied by the Public Health Service, the knowledge of the area of prevalence of which is being extended. This disease, originally reported by only two western States, was reported last year from nine States.

The infant mortality rate (deaths of infants under one year of age per 1,000 live births), considered an important index of the efficiency of public health work, has been decreasing for many years. The rate for 28 States in 1926 was 72.8, as compared with 71.5 for 1925, both of which rates are extremely low as compared with rates of a few years ago (about 100 in 1915).

#### AIR POLLUTION IN NEW YORK CITY

Recent analyses of air in the streets of New York City showed pollution with carbon monoxide from automobile engine exhausts amounting to from 24 to 284 parts of carbon monoxide to 1,000,000 parts of air.

The investigation was made by the City Department of Health with the cooperation of the United Public Health Service. This degree of pollution is regarded as a menace to health, especially of those who are susceptible to carbon monoxide. Some so-called authorities in estimating the danger of atmosphere pollution by carbon monoxide contend that 400 to 600 parts to 1,000,000 parts of air are necessary to produce serious results. Dr. Harris, Commissioner of Health, believes that the dilution encountered in the streets of New York may seriously affect persons breathing the street atmosphere for a considerable length of time under present conditions, and that dizziness, headache, sense of weakness, nausea, and pallor may result.

Another report of the analysis of air in the Holland Tunnel under the North River, which is used to a great extent by automobiles, shows a lower proportion of carbon monoxide than is found in the streets of the city.

#### A CANCER RESEARCH IN THE ISLE OF MAN

An effort is being made to induce the English Ministry of Health to sanction concentrated cancer research under Dr. Louis Sanborn in the Isle of Man.

Dr. Sanborn is working under the direction of the British School of Tropical Medicine. He has a theory with respect to the origin of cancer and hopes that he may find evidence of support of his theory if given sufficient support. He suspects cockroaches, cellar beetles, and other insects as contagion carriers. The authorities of the self-governing Isle of Man have given permission to carry on the work there and the local medical society has approved the project.

Dr. Sanborn's views have been published in the *Journal of Tropical Medicine and Hygiene* of London. He has made an especial study of cancer in Northern Italy and has been led to suspect that cancer is more prevalent in well-defined areas.

## THE BOSTON Medical and Surgical Journal

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## Christmas, 1927

THE venerable JOURNAL, supported by the dignity rather than burdened by the weight of its advancing years, for the one hundredth time wishes its readers a Merry Christmas. One hundred Christmases!—what a small fortune for gifts they must have seen expended: imagine them all rolled into one—what a mass of holly; what a bower of mistletoe with all that it implies; what an army of stockings, ranging from the humble homespun to the modern lisle; what a forest of Christmas trees—it intrigues the imagination!

The JOURNAL's first Christmas, before it was yet a year of age, was celebrated by its joint sponsors, John Collins Warren, John Ware and Walter Channing, with due solemnity, we hope. Later others were added to the staff—Chandler Robbins and James Wilson, and serious-minded though they were, we trust that the Christmas spirit pervaded them at this time of year and loosened the sentiment which all good doctors possess and moved them to mingle with their letters from Vienna and their bills of mortality a message of cheer to the worthy practitioners of

Boston and Cambridge and Charlestown and Dedham.

Their race was run, their JOURNAL was good and it survived them. For twenty-six years it prospered under the guidance of Jerome V. C. Smith and his associates, and others came to take their places; many familiar names are recognized in the list of those who brought wisdom to its sanctum—James C. White, David W. Cheever, J. Collins Warren the second, Thomas Dwight, George B. Shattuck and others of a newer vintage and a later date, Doctor Shattuck equalling in service the tenure of Jerome Smith.

Many Christmases, varying in the type of their observance as the spirit of the festival developed, passed before the eyes of these editors, and perhaps they did not all proclaim their messages of good will to their fellows through the pages of the JOURNAL, but always it was present in their hearts if it did not flow from their pens, for good will toward mankind was deeply rooted in the nature of each of them—they were all New England physicians.

On this, then, the turning point of a century of Christmases, let those who, for a brief space, are taking their places in the editorial procession, wish for their readers a Merry Christmas; let them wish it on their own behalf and in behalf of that shadowy group that stands behind them in the sanctum, and let it be multiplied an hundred fold!

With candles light the windows now  
And dress the house with holly—

When light hearts deck the balsam bough  
Then heavy ones were folly.

Hang mistletoe above the door  
And set the presses humming—  
An hundred such have gone before;  
A thousand more are coming.

A smoke-wreathed chimney passing well  
Adorns a snow-clad valley—  
New England has them both so we'll  
Around her hearthstones rally.

Practitioners of cunning arts,  
Today withhold your doses—  
Look not at tongues but into hearts  
—There find your diagnoses.

### ABSTRACT JOURNALS

A PRODUCT of the curiosity of men and the widening field of knowledge has been the establishment of various abstract journals which summarize essential points from work being carried on in the different fields of human knowledge. For a long time German scientists held the honors in this particular field, but at the present time this country has no reason to be ashamed.

One of our most ambitious projects is "Biological Abstracts", now nearly a year old. One interesting feature of this abstract journal is

that it takes up practically every aspect of theoretical and applied biology except clinical medicine, and not a few abstracts deal with definitely clinical subjects. It is somewhat of an advantage to the omnivorous reader to be able to turn in the same number from plant ecology to immunology. An added advantage of his combining of fields is that each worker has an opportunity to see what is going on outside his own proper field, and is able to keep in touch with at least the major advances. The field of clinical medicine has long been covered by the abstract department of the *Journal of the American Medical Association*.

Any abstract journal is, of course, subject to the inherent weakness of abstracts, namely, that they are prepared by one person without regard for the particular interests of others, and what appears of essential value to one person may be irrelevant to another. However, the abstracts at least serve to call attention to those articles which may be worth reading in the original. There is not so wide a gap between the fundamental basis of the tabloid newspapers and the abstract journal. Each seeks to give in fewest words the things which they think will interest their readers.

#### THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BENEDICT, FRANCIS G. Ph.D., D.Sc., Director of the Nutrition Laboratory Carnegie Institution of Washington. His subject is: "A Field Respiration Apparatus For a Medical and Physiological Survey of Racial Metabolism." Page 1161. Address: 29 Villa St., Boston.

LUTHER, ELIOT H. A.B., M.D. Harvard Medical School 1921, Formerly Intern at the Boston City Hospital, 1921-23, Intern at the Children's Hospital, 1923-24, Resident at the Children's Service of the Massachusetts General Hospital, Now Assistant in Pediatrics at the Harvard Medical School and Children's Service at the Massachusetts General Hospital. His subject is: "The Early Diagnosis and Non-paralytic Anterior Poliomyelitis." Page 1175. Address: Harvard Medical School, Boston.

BALPH, JAMES. M.D. Jefferson Medical College 1920, Assistant in Medicine at St. Francis Hospital, Pittsburgh and Instructor in Medicine at the University of Pittsburgh. His subject is: "Multiple Hereditary Telangiectasis." Page 1177. Address: 3271 W. Liberty Ave., Pittsburgh, Pa.

CORIAT, ISADOR H. M.D. Tufts College Medical School 1900, Formerly Assistant Physician, Worcester State Hospital, First Assistant Physician for Diseases of the Nervous System at the Boston City Hospital. **Ex-President American**

Psycho-Analytic Association, Member of the American Psychiatric Association, New England Society of Psychiatry, Massachusetts Psychiatric Society, International Psycho-Analytic Association, Member Educational Training Committee of the International Psycho-Analytic Association. His subject is: "Progress in Psychiatry." Page 1179. Address: 416 Marlboro St., Boston.

#### The Massachusetts Medical Society

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#### What is the Treatment of Bleeding in Early Labor?

A small amount of bleeding is often one of the signs of beginning labor.

If any considerable bleeding occurs, the patient should be given a  $\frac{1}{4}$  gr. morphine, and removed at once to a hospital in an ambulance, if a hospital is within reach. No vaginal examination should be attempted until arrangements have been made to control hemorrhage if it should be increased by the examination.

The two most common causes of hemorrhage at this time are early separation of the placenta, and placenta praevia. The diagnosis between these two conditions can easily be made by introducing a finger into the cervix; if no placenta can be felt, then, by elimination the bleeding is fairly certain to be from a partially detached placenta. An anesthetic is usually necessary for a thorough examination.

The majority of cases of partially detached placenta, especially in multiparae will deliver themselves without much danger to the mother, but often with a dead baby. Time is usually an important factor, hence anything which will hasten the delivery without increasing the danger to the mother or baby will be of help. Rupturing the membranes will often serve this end, and in many cases result in the cessation of the hemorrhage. The introduction of a large rubber bag of the Vorhees type has the same effect. Delivery by forceps or version should be performed as soon as dilatation is complete, if there is reason to believe the baby is living—or in any case where the mother's condition shows an increasing loss of blood. If the hemorrhage is severe, or the baby's heart beat shows the life of the baby is in jeopardy, an early Caesarean will in some cases be justified. The occasional case of completely detached placenta with the accompanying symptoms of pain and shock usually demands a Caesarean.

If the case proves to be one of marginal placenta praevia, rupturing the membranes and allowing the presenting part to press against the cervix will be sufficient to stop the bleeding.

If the praevia is more extensive, a rubber bag

of the Vorhees type preferably No. 6 should be introduced after the membranes are ruptured, and the baby delivered with forceps or version immediately after the expulsion of the bag if the cervix is fully dilated or dilatable. If the cervix is not well dilated, and the bleeding continues, a version should be done, and a leg brought down to control the bleeding, but delivery delayed until dilatation is complete.

In the out-lying districts, remote from a hospital, the situation is more serious. The physician in charge may be confronted with a sharp hemorrhage which needs immediate treatment. If the cervix is dilated enough to admit two fingers, a Braxton-Hicks version should be performed, but full dilatation awaited before extraction of the baby. If the attending physician is not competent to do a Braxton-Hicks, he should pack the vagina tightly with sterile gauze and send for assistance.

Questions of a similar nature to the above will be discussed in the JOURNAL each week. They may be addressed to the Clerk of the Committee, in care of the JOURNAL and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

## MISCELLANY

### STUDENTS IN THE TRAINING SCHOOL FOR ATTENDANT NURSES

Twenty-three women from all parts of New England have enrolled in the present class of the Training School for Attendant Nurses under the auspices of the Household Nursing Association. This class is now beginning its third week at the school. Following this course the women will train for 10½ months in eight affiliating hospitals.

Miss Katherine Shepard, Superintendent of the School, is assisted in teaching by the following: Miss Helen Z. Gill, teacher of physiology, Miss Esther F. Bond, teacher of dietetics; Miss Hope A. Dyer, housekeeping and cooking; Miss Beatrice C. Holland, sewing.

This training school for attendant nurses is supported by a large group of directors, including Mrs. William W. Vaughan, honorary president; Mrs. Charles Alexander Newhall, president; Mrs. Moses Williams, Mrs. Carl Dreyfus, Miss Natalie S. Whitwell, Mrs. John T. Bottomley, Mrs. George L. Catlin, Mrs. Henry M. Channing, Mrs. J. Randolph Coolidge, Mrs. Samuel Elliot, Mrs. David J. Evans, Mr. Donald McK. Frost, Mrs. Robert D. Hall, Dr. Robert Osgood, Mrs. Roger Pierce, Mrs. William L. Putnam, Mrs. Robert W. Rivers, Mrs. Charles L. Scudder, Mrs. Henry D. Tudor, Mrs. C. P. Woodworth, Mrs. William Adams Copeland, Mr. H. Bradlee Fenno, Mrs. Philip Sylvester, Mrs. Howard Rogers.

### THIRD RACE BETTERMENT CONFERENCE

COUNTRY'S FOREMOST SCIENTISTS, RESEARCH WORKERS, AND EDUCATORS TO GATHER AT BATTLE CREEK JANUARY 2-6

Preliminary announcement of the Third Race Betterment Conference, the first to be held since the world war, has been made by Dr. C. C. Little, President of the University of Michigan, who is heading the Conference Committee, which includes among

others, two mid-western university presidents, Max Mason, of the University of Chicago, and Glenn Frank, of the University of Wisconsin.

The two-fold object of the fourth-coming Conference, which will be held at Battle Creek, January 2-6, is first to assemble the facts of race degeneracy, and also of recent scientific progress dealing with the prolongation of human life, and second to give a greater impetus to the dissemination of these facts for the benefit of humanity. Special group sessions will be given over to reports of recent progress in the field of bacteriology, medicine, nutrition, eugenics, physiology and education.

The forth-coming Conference which will be attended by several hundred of the country's foremost scientists, on the one hand, and educators on the other, all interested in the problem of a united front on the question of race betterment, is being organized under the auspices of the Race Betterment Foundation, the founder and president of which is Dr. John Harvey Kellogg and which sponsored the first and second Conferences held in 1914 and 1915 at Battle Creek and at the Panama Pacific Exposition in San Francisco. The Battle Creek Sanitarium will act as host for the January Conference.

Delegates will be present from many of the world's leading research laboratories including the Rockefeller Institute for Medical Research, the Sheffield Scientific School, The Eugenics Record Office of the Carnegie Institution, Cornell University Medical College, the Universities of Chicago, Johns Hopkins, Harvard, Yale, Northwestern, Wisconsin, etc.

The list of speakers announced by Dr. Little is made up of the following:

Miss Grace Abbott, Chief Children's Bureau, U. S. Department of Labor, Washington, D. C.; Miss Mary Anderson, Director Women's Bureau, U. S. Department of Labor, Washington, D. C.; Dr. Charles Scott Berry, Professor of Educational Psychology, University of Michigan, Ann Arbor; Dr. Louis Faugeres Bishop, Fordham University, New York City; Dr. Herman N. Bundesen, City Health Commissioner, Chicago; President American Public Health Association; Dr. Paul M. Butterfield, Chief Children's Urological Clinic, New York City;

Dr. Anton J. Carlson, Chairman Department of Physiology, University of Chicago; Dr. Alexis Carrel, Rockefeller Institute for Medical Research, New York City; Professor W. W. Charters, Professor of Education, University of Chicago; Prof. Russell H. Chittenden, Director Sheffield Scientific School, Yale University, New Haven, Conn.; Dr. C. B. Davenport, Director Eugenics Record Office, Carnegie Institution of Washington, Cold Springs Harbor, N. Y.; Hon. J. J. Davis, Secretary of Labor, Washington, D. C.;

Prof. J. B. Edmondson, Secretary North Central Association; Professor of Secondary Education, University of Michigan, Ann Arbor; Dr. W. A. Evans, Professor of Hygiene, Northwestern University; "How to Keep Well" Department, Chicago Tribune; Professor Irving Fisher, Professor of Political Economy, Yale University, New Haven; Glenn Frank, President of University of Wisconsin, Madison, Wisconsin; Prof. J. W. Glover, Professor of Mathematics and Insurance, University of Michigan, Ann Arbor; Hon. Fred W. Green, Governor of Michigan, Lansing; Prof. M. F. Guyer, Professor of Zoology, University of Wisconsin;

Dr. Louis I. Harris, City Health Commissioner, New York City; Dr. H. A. Haynes, Director University Hospital, University of Michigan, Ann Arbor; Charles Holmes Herty, Advisor to the Chemical Foundation, Inc., New York City; Dr. Wm. J. Hickson, Director Psychopathic Laboratory, Municipal Court, Chicago; Dr. M. Hindheide, Director of Nutrition, Copenhagen, Denmark; Frederick L. Hoffman, Consulting Statistician, Prudential Insurance Company of America, Newark, N. J.; Harry E. Hull, Com-

missioner General of Immigration, Washington, D. C.; Major-General M. W. Ireland, Surgeon General U. S. Army, Washington, D. C.; Dr. Andred Conway Ivy, Head Division Physiology and Pharmacology, Medical School, Northwestern University, Chicago;

Hon. Albert Johnson, Chairman Committee on Immigration and Naturalization, House of Representatives, Washington; E. O. Jordan, Chairman Department of Hygiene and Bacteriology, University of Chicago; Prof. Charles H. Judd, Director School of Education, University of Chicago;

Dr. John Harvey Kellogg, President Race Betterment Foundation; Superintendent Battle Creek Sanitarium; Dr. Vernon Kellogg, Permanent Secretary and Chairman Division of Educational Relations, National Research Council, Washington; Dr. Arthur I. Kendall, Dean Biology, Northwestern University Medical School, Chicago; Dr. Guy L. Kiefer, State Health Commissioner, Lansing; John A. Kingsbury, Secretary Milbank Memorial Fund, New York City;

Dr. Alexander Lambert, President Committee to Study Tobacco Problem; Professor of Clinical Medicine, Cornell University, New York City; Dr. H. H. Laughlin, Assistant Director Eugenics Record Office, Carnegie Institution of Washington, Cold Spring Harbor; Dr. Oswald S. Lowsley, Director James Buchanan Brady Foundation for Urology, New York Hospital;

Dr. Franklin H. Martin, Director General American College of Surgeons; Director Gorgas Memorial Institute, Chicago; Max Mason, President University of Chicago; Dr. E. V. McCollum, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.; Dr. A. T. McCormack, Secretary State Board of Health, Louisville, Ky.; Carl E. Milliken, Secretary Motion Picture Producers and Distributors of America, Inc., New York City; Dr. Louis H. Newburgh, Professor of Clinical Investigation, Dept. of Internal Medicine, University of Michigan, Ann Arbor;

Judge Harry Olson, Municipal Court, Chicago; Prof. M. V. O'Shea, Director Department of Education, University of Wisconsin; Dr. William O'Shea, Supt. of Schools, New York City; Dr. George N. Papanicolaou, Cornell University Medical College, New York City; Dr. Mary Swartz Rose, Professor of Nutrition, Teachers' College Columbia University; Prof. Edward Alsworth Ross, Professor of Sociology, University of Wisconsin, Madison;

Dr. William Alfred Sawyer, Medical Director, Eastman Kodak Company, Rochester; Walter Dill Scott, President Northwestern University, Chicago; Francis H. Sisson, National Community Foundation; Vice President Guaranty Trust Co., New York City; Dr. Maude Slye, University of Chicago; Dr. William F. Snow, President National Health Council, New York City; Prof. A. A. Stagg, Professor and Director Department of Physical Culture and Athletics, University of Chicago; Dr. George David Stewart, President American College of Surgeons, New York City; Dr. John Sundwall, Professor of Hygiene and Public Health, University of Michigan, Ann Arbor;

Judge Ruth Thompson, Muskegon County Probate Court, Muskegon, Mich.; Dr. Henry F. Vaughn, City Health Commissioner, Detroit; Dr. Alfred Scott Warthin, President National Association of American Physicians; Director of Pathological Laboratory, University of Michigan, Ann Arbor; Albert Edward Wiggan, Writer and Lecturer, New York City; Dr. Harvey W. Wiley, Washington, D. C.; Dr. Frankwood E. Williams, Medical Director National Committee for Mental Hygiene, New York City; and Fielding H. Yost, Professor of the Theory and Practice of Athletics, University of Michigan, Ann Arbor.

The conference committee includes many persons representing organizations dealing with general human affairs.

## IS CANCER INCREASING?

A recent statement by Dr. Frederick L. Hoffman in which he points to increasing cancer death rates as showing that the war against cancer is not producing results has been answered by Dr. Francis Carter Wood in a letter to the *New York Times* which deserves more than passing mention.

Dr. Hoffman's statement is based on the mortality statistics of one hundred and nineteen American cities. He finds it "amazing" and "terrifying" that in most of the large cities of the United States the crude cancer mortality rate exceeds 100 per 100,000 and says that "the cancer record for 1926 is a dismal indictment of the failure of modern efforts to check the ravages of this dreadful affliction."

Dr. Wood in reply points out that there are other reasons than the one assigned by Dr. Hoffman for this apparently high rate. When a cancer is discovered, say in a country person, in an operable stage, the sufferer is usually sent to a city where the resources of large, scientific institutions are available for almost always these are located in the large cities. And when a cancer is found in an inoperable stage, the patient is often sent to the city where his suffering may be alleviated and where he may receive proper care. Therefore, the cancer death rate of cities is higher than it would be if only the actual city population were taken into account.

Then, too, Dr. Wood says, it must be remembered that more correct diagnoses of cancer are made than formerly, as the ability to recognize cancer is increasing. Dr. Wood holds that when all cases of cancer are diagnosed and reported correctly, the rate will increase and then remain stationary, as it has in Switzerland. There, he says, post-mortem examinations are made in a large proportion of the deaths, and cases of cancer which have escaped diagnosis are discovered. In the United States an exceedingly small proportion of post-mortem examinations are made, and Dr. Wood estimates that at least 40 per cent. of the cases of cancer remain unrecognized. He says that the rise in the recorded rate, as reported by Dr. Hoffman, "does not mean that the disease is increasing; it merely shows improvement in the diagnostic ability of the medical profession."—*Campaign Notes of American Society for the Control of Cancer.*

## WEEKLY HEALTH INDEX

### SUMMARY

Telegraphic returns from 67 cities with a total population of twenty-nine million for the week ending December 10 indicate a mortality rate of 12.1 as against 12.3 for the corresponding week of last year. The highest rate (20.9) appears for San Diego, Calif., and the lowest (6.9) for Trenton, N. J. The highest infant mortality rate (150) appears for Schenectady, N. Y., and the lowest for Duluth, Minn., Trenton, N. J., and Wilmington, Del., which reported no infant mortality.

The annual rate for 66 cities is 12.3 for the forty-nine weeks of 1927, as against a rate of 13.2 for the corresponding weeks of 1926.

## BEFORE YOU INVEST—INVESTIGATE

Physicians who are not affiliated with sound banking organizations and who wish advice on investments may learn about the standing of an advertised stock by consulting the Boston Better Business Bureau, an organization which is supported by reputable business institutions and is operating for the purpose of preventing financial losses. This organization has nothing to sell and is operated without profit.

## RECENT DEATHS

**KIERNAN**—DR. JOHN ANDREW KIERNAN, 54 years old, United States Department of Agriculture, died Tuesday at his home, 1213 Michigan Avenue, Northeast, Washington, D. C.

Dr. Kiernan was appointed chief of the tuberculosis eradication division when it was established in 1917. During his administration the disease in animals has been reduced approximately 50 per cent.

He was born in Jersey City, N. J., and was graduated from New York University in 1895. He served in the meat inspection service in the New England States before becoming a resident of Washington. He is survived by his wife, Mrs. Ellen Cogan Kiernan, and three sons, John Kiernan, Paul Kiernan, Joseph Kiernan, and a brother Frank who is Executive Secretary of the Massachusetts Tuberculosis League. Dr. Kiernan gave a very interesting address at the Annual meeting of the League in April last on Bovine Tuberculosis.

**WOODBURY**—DR. WILLIAM RICHARDSON WOODBURY, a non-resident Fellow of the Massachusetts Medical Society, and graduate of Harvard Medical School in the class of 1889, died at his home in Rochester, N. Y., September 30, 1927, of pneumonia.

**REDMOND**—THOMAS HENRY REDMOND, of Lawrence, formerly on the staff of the Lawrence General Hospital, died of cerebral hemorrhage, November 4, 1927. He was a graduate of Baltimore Medical College in 1897 and joined the Massachusetts Medical Society in 1907.

## CORRESPONDENCE

### ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,  
November 26, 1927.

*Editor, Boston Medical and Surgical Journal:*

In addition to the articles enumerated in our letter of October 29, the following have been accepted:

#### Abbott Laboratories

Staphylococcus Mixed Bacterin.  
Typhoid Prophylactic, 5 cc. vials.  
Typhoid Prophylactic, 20 cc. vials.

#### Cutter Laboratory

Pollen Extracts—Cutter, 5 cc. vial:  
Alkali Weed Pollen Extract Concentrated—Cutter; Allscale Pollen Extract Concentrated—Cutter; Annual Saltbush Pollen Extract Concentrated—Cutter; Arizona Ash Pollen Extract Concentrated—Cutter; Bermuda Grass Pollen Extract Concentrated—Cutter; Black Walnut Pollen Extract Concentrated—Cutter; Box Elder Pollen Extract Concentrated—Cutter; Burning Bush Pollen Extract Concentrated—Cutter; Canary Grass Pollen Extract Concentrated—Cutter; Careless Weed Pollen Extract Concentrated—Cutter; Coast Sagebrush Pollen Extract Concentrated—Cutter; Cocklebur Pollen Extract Concentrated—Cutter; Common Ragweed Pollen Extract Concentrated—Cutter; Corn Pollen Extract Concentrated—Cutter; Cottonwood Pollen Extract Concentrated—Cutter; False Ragweed Pollen Extract Concentrated—Cutter; Foxtail Grass Pollen Extract Concentrated—Cutter; Giant Ragweed Pollen Extract Concentrated—Cutter; Johnson Grass Pollen Extract Concentrated—Cutter; June Grass Pollen Extract Concentrated—Cutter; Lamb's

Quarters Pollen Extract Concentrated—Cutter; Marsh Elder Pollen Extract Concentrated—Cutter; Mountain Cedar Pollen Extract Concentrated—Cutter; Mugwort Pollen Extract Concentrated—Cutter; Oak Pollen Extract Concentrated—Cutter; Olive Pollen Extract Concentrated—Cutter; Orchard Grass Pollen Extract Concentrated—Cutter; Plaintain Pollen Extract Concentrated—Cutter; Red Root Pigweed Pollen Extract Concentrated—Cutter; Red Top Pollen Extract Concentrated—Cutter; Russian Thistle Pollen Extract Concentrated—Cutter; Rye Grass Pollen Extract Concentrated—Cutter; Sagebrush Pollen Extract Concentrated—Cutter; Shad Scale Pollen Extract Concentrated—Cutter; Timothy Pollen Extract Concentrated—Cutter; Tumbleweed Pollen Extract Concentrated—Cutter; Velvet Grass Pollen Extract Concentrated—Cutter; Western Ragweed Pollen Extract Concentrated—Cutter; Western Waterhemp Pollen Extract Concentrated—Cutter; Wild Oat Pollen Extract Concentrated—Cutter; Yellow Dock Pollen Extract Concentrated—Cutter.

#### Lederle Antitoxin Laboratories

Anaerobic Antitoxin (Polyvalent)—Lederle.

#### Merck & Co., Inc.

Erythrol Tetranitrate Tablets—Merck,  $\frac{1}{4}$  grain.

#### H. K. Mulford Company

Ampuls Dextrose (d-Glucose) 10 gm., 20 cc.  
Ampuls Dextrose (d-Glucose) 25 gm., 50 cc.

#### Parke, Davis & Co.

Ephedrine Sulphate—P., D. & Co.

#### Prophylacto Manufacturing Company

Ephedrine Hydrochloride—Pemco.

#### E. R. Squibb & Sons

Insulin Squibb, 100 units, 10 cc.

#### Tailby-Nason Company

Nason's Palatable Cod Liver Oil.

Yours truly,

W. A. PUCKNER, *Secretary*,  
Council on Pharmacy and Chemistry.

## MALPRACTICE INSURANCE

*Editor, Boston Medical and Surgical Journal:*

You will be interested in knowing that the Lawrence Medical Club, at its regular monthly meeting, went on record as approving, unanimously, the stand that the Massachusetts Medical Society is taking regarding malpractice insurance.

The Club was addressed by Mr. George H. Crosbie, and he cemented all wavering souls to the idea that the profession must stand together in this fight to banish, or at least markedly reduce, the number of malpractice suits.

This matter will be brought up again, and all hesitating members should see the light.

Very truly yours,

R. V. BAKETEL, *Sec'y Lawrence Medical Club*.

### CLAREMONT GENERAL HOSPITAL NEEDS FEMALE TECHNICIAN

December 16th, 1927.

*Editor, Boston Medical and Surgical Journal:*

The Claremont General Hospital, is in need of a female technician, who is capable of doing general laboratory work including blood examination, and also trained in running a Kelly-Loett X-ray outfit.

I wonder if you could help us in finding such an individual.

Yours very truly,

EMERY M. FITCH, M.D.

ANOTHER APPEAL TO THE DEAN OF BOSTON  
UNIVERSITY MEDICAL SCHOOL

Searsmont, Me., December 8, 1927.

Dean of Boston University Medical School:

Dear Sir—I wrote to you some months ago about our need of an M.D. in this town and that we paid \$600 per year bonus.

We have not yet secured a man for the place and are now offering \$900 per year. The practice would amount to several thousands of dollars per year.

Hoping that you will be able and willing to help us secure a doctor to locate here, I am  
Yours sincerely,

C. H. CUNNINGHAM, Health Officer.

P. O. Morrill, Me., R. F. D. 2.

## A LETTER OF APPRECIATION

December 11, 1927.

Editor, Boston Medical and Surgical Journal:

In the malpractice suit recently won by Dr. W. P. Grovestein and myself in the Brockton Superior Court alleging an incorrect diagnosis and an unnecessary operation I would like to state that I was highly pleased with the services rendered by the U. S. Fidelity and Guaranty Co. through its representative, Mr. Crosbie, and its attorney Mr. Cunningham.

The worry and strain of such a case was greatly relieved by the careful attention given to all details by both of these gentlemen and their assistants. Although it was suggested by the presiding judge after the testimony of the plaintiffs had been heard that we settle the case out of court, we went through and won. I believe great credit is due both Mr. Crosbie and Mr. Cunningham in the careful preparation of this case and should so like to express my appreciation to them and those who assisted.

Very truly yours,

SETH L. STRONG.

390 Riverway, Boston.

## NEWS ITEMS

**CAMBRIDGE MEDICAL IMPROVEMENT SOCIETY**—The following Fee Table was adopted by the members of the Cambridge Medical Improvement Society at its meeting, October 10:

For each visit, in cases of ordinary attendance	\$4.00
For a visit in consultation	10.00
For a visit after 9 P. M. and before 8 A. M.	5.00 to 10.00
For an office call, or advice by letter or telephone	3.00
telephone	3.00
For attendance during labor	50.00
For major operations	100.00 to 500.00
For minor operations	10.00 to 100.00

Prenatal care and visits after confinement or operation shall be charged for as in cases of ordinary attendance.

Additional fees may be charged for laboratory tests, X-ray examinations and other special diagnostic procedures, or when extra time is spent in travel or detention.

Such deductions may be made as charity may require and such additions as the peculiar circumstances of a case may justify.

**CANCER CONFERENCE**—The first of a series of conferences on the subject of cancer was held at the Pondville State Hospital December 15th.

The speakers included Dr. George H. Bigelow, State Commissioner of Public Health, Dr. Herbert L. Lombard and Dr. Ernest M. Daland.

A round table discussion was led by Miss Ida M. Cannon and Frederic L. Edwards.

**DR. FRANCIS D. DONOGHUE URGES INSURANCE TO COVER MEDICAL SERVICE GIVEN TO VICTIMS OF MOTOR ACCIDENTS**—At a meeting of the Brockton Medical Society, December 15, 1927, Dr. F. D. Donoghue, Medical Adviser to the Massachusetts Industrial Accident Board, advocated the creation of a State Board which will function in a plan to insure charges of hospitals and doctors who are called upon for treatment of victims of motor accidents. He explained that the indemnity insurance now in force did not protect hospitals and doctors in the collection of legitimate charges. He suggested that a gasoline tax and motor registration fees should be drawn upon to pay these charges.

Many doctors have been called to attend emergencies due to motor accidents and occasionally find difficulty in collecting fees. This is not rare in cases where calls are sent to several doctors, for the likelihood of securing payment for travel by those who arrive after the first respondent is not very good.

NEW BLOOD TEST FOR CANCER REPORTED BY  
GERMAN DOCTOR

In our issue of December 1 reference was made to this discovery. We have since received the following information from Dr. Simonis: He was born in Hamburg, has attended the Universities of Berlin, Erlangen and Kiel where he became Doctor of Medicine. He has been associated with hospitals in Hamburg and at one time was Medical Manager of a sea sanatorium. Dr. Simonis is now engaged in private practice.

**MUSICAL TO AID THE BOSTON TUBERCULOSIS ASSOCIATION**—On Friday afternoon, December 16, Frank Ramseyer, pianist, and Aidan Redmond, baritone, gave a concert in the Hotel Statler for the benefit of the Boston Tuberculosis Association.

The Association needs more money than is received from the seal sale to enable it to carry on the enlarged Prendergast Preventorium which plans for an additional service in caring for forty more children than were accommodated last year.

**HARVARD MEDICAL SCHOOL NEWS**—APPOINTMENTS—LECTURES ON MEDICAL SUBJECTS—The following appointments were approved by the corporation on December 12, 1927:

Appointments for one year from September 1, 1927: Francis Winslow Palfrey, M.D., Instructor in Medicine; Granville Allison Bennett, M.D., Instructor in Pathology; Robert William Buck, M.D., Assistant in Medicine; Wyman Richardson, M.D., Assistant in Medicine; James Harvey Townsend, M.D., Assistant in Medicine; Eliot Hubbard, Jr., Assistant in Pediatrics.

Appointment from November 1, 1927, to September 1, 1928: Edward Charles Vogt, M.D., Assistant in Roentgenology.

Appointment from February 1, 1928, to September 1, 1928: Cornelius Packard Rhoads, M.D., Instructor in Pathology.

Scholarship Award for 1927-28: To Dr. Edward Benson Benedict, the Dr. William Hunter Workman Scholarship.

The Faculty of Medicine of Harvard University offers a course of free public lectures on medical subjects, to be given at the Medical School, Longwood Avenue, Boston, on Sunday afternoons, beginning January 8 and ending March 25, 1928. The lectures will begin at four o'clock and the doors will be closed at five minutes past the hour. No tickets are required.

## SUNDAY AFTERNOONS AT FOUR O'CLOCK

January 8—Mr. Norman W. Fradd: Maintaining Physical Efficiency by Work and Play.

January 15—Dr. Cecil K. Drinker: Gas Poisoning, Electric Shock and Drowning.

January 22—Dr. Alfred C. Redfield: The Laws of the Heart.

January 29—Dr. George R. Minot: The Importance of Diet in the Treatment of Anemia.

February 5—Mr. Johnson O'Connor: Aptitude Measurements in Vocational Guidance.

February 12—Dr. Hallowell Davis: The Child Meets the Family.

February 19—Dr. William L. Aycock: Infantile Paralysis.

February 26—Dr. Fred A. Beckford: Restoration of Function in the Mouth and Teeth as a Health Measure.

March 4—Dr. Gilbert Horrax: Brain Disorders from the Surgical Standpoint.

March 11—Dr. Daniel F. Jones: Cancer.

March 18—Mr. Henry M. Loomis: Public Health Aspects of Canned Food.

March 25—Dr. Richard P. Strong: Health Conditions in Equatorial Africa Contrasted with Those in Countries Where Sanitation Prevails.

Further information in regard to any of the lectures may be obtained by addressing the Chairman of the Committee on Public Lectures, the Harvard Medical School, 240 Longwood Avenue, Boston, Mass.

**INCREASE OF CASES OF SMALLPOX**—The United States Public Health Service reports that smallpox is somewhat more prevalent in certain sections of the United States. Forty-one States reported four hundred and forty-five cases for the week ending November nineteen, 1927, with about the same number for the two following weeks. The areas in which the disease is more prevalent are in the northern States extending to the Pacific Coast.

**DEATHS DUE TO BENZOL POISONING**—Dr. Harrison Maitland, Chief Medical Examiner of Newark, N. J., advocates national legislation to prohibit the use of Benzol in factories which manufacture artificial leather unless adequate protection can be provided for the workmen. Several deaths have occurred among workmen in a factory in or near Newark due to Benzol poisoning.

## NOTICES

**A CELEBRATION OF THE ONE HUNDREDTH ANNIVERSARY OF THE FIRST ISSUE OF THE BOSTON MEDICAL AND SURGICAL JOURNAL**

On February 19, 1928, The BOSTON MEDICAL AND SURGICAL JOURNAL will have been in continuous existence for one hundred years and it seems appropriate that this unique record of medical journalism should be observed.

The JOURNAL is owned by the Massachusetts Medical Society and the Committee in charge of the JOURNAL and the Editorial Staff extend a cordial invitation to all of the members of the Society to attend a subscription dinner in Boston on Saturday evening, February 18th, 1928.

Interesting addresses will be delivered after the dinner.

Further details of the program will be published later.

## CORRECTION

In the article "Progress in Nutrition," page 1135, our issue of December 15, the printer made an inexcusable error.

Under the heading "Beriberi, Scurvy and Pellagra" the following should have appeared: "In consideration of all the evidence beriberi is preeminently a nutritional disorder and due to a dietary deficiency, etc."

We regret the error and apologize to the author.

## REPORTS AND NOTICES OF MEETINGS

### ANNUAL MEETING OF THE MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

COPLEY PLAZA HOTEL, BOSTON, WEDNESDAY,  
MAY 25, 1927

(Continued from page 1159)

**CAPTAIN ARMSTRONG:** Mr. Chairman and Gentlemen: I have only a very few words. There is no question as to the value of fingerprinting in a police department as well as other means of identification which we must use. We have gone from the old verbal description which you know varies with each repetition. Ten different people will describe a person in ten different ways. We have had the old photographic system, and when we got the Bertillon system we thought we had something that would be final. We were one of the first to use the French system and since then thousands of departments throughout the country have used it. When the fingerprints were first started we were a little bit sceptical and some of our neighboring cities got ahead of us; it really started at Lowell and Springfield. In 1907 I was with the originator of the French system and at that time I think the death knell of the Bertillon system had been rung because he showed me a very interesting case of fingerprints on a bottle in a murder case. You have heard Dr. Rooney and others on the question of fingerprints and there is no question as to their value. This question has been in the past associated with the criminal but it is time now that we should consider it in relation to good citizenship. We should put a premium on good citizenship. If a man is a good citizen we should have a means of identifying him registered at some place. I believe the time will come when every person in the United States will be identified in this way. There are now a great many branches where fingerprints are used. They are being used in banks as well as at police headquarters; on insurance papers, on wills and other important papers. I feel that every one should have a set of his own fingerprints filed away in case of accident. I invite you, if you have any interest in this matter, to come to the new headquarters and let us show you our methods of practical application. There are many other things in connection with fingerprints and identification by the so-called third degree, which have been abused and misstated many times; also there are many details that your medical examiners know and put into practice that you would never notice. Recently we saw an article in the newspapers stating that a flaw had been found in fingerprinting because twins had been found across the water whose fingerprints were identical. I realized the importance of that particularly in court cases and so I wrote across the water and found out that it was not true, that the fingerprints of those boys were not identical. There are many details that come up in ordinary police procedure and law enforcement and we need more and more the expert assistance of our associates in all walks of life. Recently there was a case in court where two experts were in direct contradiction. Sometimes you hear the experts criticised unfairly. In my experience, most of them are honest when you get the whole story and give opinions the proper value.

A father and two sons were concerned in another case. One of the sons had agreed to help the father purchase a piece of property. An agreement was drawn up which both signed. Later the younger son wanted the father to sell the property and the father was spoken to by the older son who said there was no agreement. The father was eighty years old. They came into court. One testified that the signa-

ture of the father was written after the signature of the son, the signature of the son was written in blue ink with a fountain pen. The expert testified and used his microscope and said: "Gentlemen, it is very plain; you can see that the black ink is over the blue ink." After everybody had examined the papers a second expert was called. He took a pen and wrote with black ink. Then he took his fountain pen and wrote with blue ink over the black and said, "If you will examine that you will find the black is apparently over the blue." It is an optical illusion. Take this little piece of red isinglass and put it over that and you will find that the signature of the father was written first and the son afterwards. There is more than a little story in that. Both were experts and both were absolutely honest. I know both men personally. One man had a larger field of experience than the other.

There was another case in a neighboring city of the murder of a man who held a mortgage on another man's farm. After a while he was found buried in a shallow grave and the grave covered with branches, and later on, the ends of those branches were cut off, the grave exposed, and the body found. There was also a jack-knife found in the pocket of a man who was arrested on suspicion. An expert took photographs of the knife blade, both sides and the edge and he took photographs of the ends of the branches and enlarged those photographs, twenty in number. Then he took a photograph of the knife blade and laid it over the end of one of the branches and you could see conclusively that the knife had made that cut. He went further and said the man who used the knife was left handed. The man arrested was left handed. The facts were presented to the court and the jury said: "Not guilty." There is more than a story to that. There is the human side to all these cases. The subject of identification is so large you could talk almost indefinitely upon it. I am not going to tire you but we will be very glad if you are interested in our work and have the time to have you come to headquarters and see what we are doing.

Dr. Leary gave a very interesting talk on Alcohol from the standpoint of a medical examiner which we hope to have in form for publication at a later date.

Dr. Poroff: Mr. Chairman, in your opening remarks, you said you would be glad to hear from the members here whether we had had a better meeting than we expected. I have belonged to the society a number of years and think all will agree with me that we have enjoyed this meeting more than any other for a long time, and if one yearly meeting will prove so interesting I think it is worth while. We have had a delightful evening and appreciate the entertainment furnished by the speakers.

The meeting adjourned at 10:35.

WM. PEARCE COUES, Secretary.

#### STAFF MEETING AT THE MASSACHUSETTS GENERAL HOSPITAL

THURSDAY, DECEMBER 8, 1927

The program included the demonstration of two cases and the presentation of studies in asthma by Dr. Francis M. Rackemann and by Dr. Harold G. Tobey.

The first case was presented by Dr. Prindle, of the West Surgical Service, who showed a Chinese woman, 26 years of age, suffering from thrombopenic purpura of extreme severity. She had been much relieved by splenectomy. The second case was presented by Dr. Swineford, of the West Medical Service, who showed a young girl, 16 years of age, with diabetes. In the past she had been subject to severe attacks of abdominal pain, simulating surgical emergencies, and on two occasions an exploratory laparotomy had

been done. In discussion, Dr. D. F. Jones emphasized the difficulty of making a diagnosis between acute pathology in the abdomen, demanding surgical treatment, and the abdominal pain that sometimes precedes the onset of coma. Dr. E. P. Joslin commented on the rare occurrence of death from coma in diabetes as now treated.

In the paper of the evening, Dr. Francis M. Rackemann presented observations on the diagnosis and treatment of asthma. The 1074 cases, which he has followed for over two years, are divided as follows: extrinsic asthma—40%, intrinsic asthma—46%, and unclassified asthma—14%. Such a grouping is based, chiefly, on the history, including an accurate analysis of the conditions under which asthma occurs, the details of which were shown by a series of charts and tables thrown on the screen. The division of foreign substances according to method of contact is most helpful. Dusts which are inhaled are seasonal (pollens) or non-seasonal, and these latter are subdivided into such groups as animal dusts, domestic dusts (orris powder, feathers, wheat flour, etc.), and occupational dusts. The ingestion of foods is more important in children than in adults. Direct contact applies to such as cocaine in dentists, ipecac in pharmacists and, perhaps, poison ivy. Such an outline of possibilities helps immensely in bringing out the cause of trouble through a proper history. Treatment is by many different methods, each of which works well in some cases. Many children and some adults have been "cured" simply by attention to general hygiene, which indicates that any doctor can do a great deal for asthma, and without special apparatus. The analysis of patients "cured" by injections, drugs and operations does not, so far, indicate any one method applicable to all cases, consequently any method of treatment, proposed as a panacea, must be extensively controlled.

Dr. Harold G. Tobey, discussing the relation of the nose and throat to asthma, commented on the occurrence of vasomotor rhinitis, which he suggested was a sort of nasal asthma. This condition is not constantly found in any one group of asthmatics and is, therefore, not necessarily dependent upon any extrinsic cause. Foci of infection in the sinuses and tonsils are found in about 60% of all asthmatics, but radical treatment is followed by a "cure" of asthma in only a few cases. Nevertheless, lesions of this sort do have an effect upon the patient's general condition and usually require treatment for their own sake and regardless of the asthma. Since treatment of the nose and throat is occasionally followed by marked improvement of the asthma, the patient should be given the benefit of the doubt.

In discussion, Dr. Harold C. Stuart of the Children's Hospital commented on the high percentage of extrinsic causes of asthma in children. Dr. Rackemann, in discussion, emphasized his efforts to rule out extrinsic causes in the "bacterial cases", whose attacks occur after "colds" and without any change in environment, occupation, dietary or habits which could be interpreted as a new extrinsic factor. Speaking of adrenalin, he stated that small doses (even 0.20 cc) often suffice to control the asthmatic attack without producing the disagreeable trembling, pallor, and weakness accompanying the larger dosage.

At the next clinical meeting of the staff of the Massachusetts General Hospital, Thursday, January 12 at 8:15 p. m., there will be the usual presentation of cases, a consideration of fractures by Drs. D. F. Jones and A. W. Allen, and of arthritis by Dr. Nathaniel Allison.

#### CLINICAL STAFF MEETING OF UNION HOSPITAL, FALL RIVER

The regular monthly meeting of the Union Hospital Staff was held at the Stevens Clinic on Thursday, December 1, at 8:15 P. M.

Dr. E. A. McCarthy, President, presided over the routine business which had to do with the deaths occurring during the previous month. Forty members and guests were present and had the pleasure of hearing the speaker of the evening, Dr. William Jason Mixter of Boston, whose subject was "Surgical Diagnosis in Head Injuries". The discussion was opened by Dr. D. J. Fennelly and Dr. T. F. Gunning. The meeting was adjourned at 10:45 P. M. following a rising vote of thanks to Dr. Mixter. Refreshments were served.

#### RESUME OF DR. MIXTER'S PAPER

##### *Handling of Head Injuries*

When the patient arrives at the hospital routine treatment should be given. Directions for this treatment should be posted in the Accident Ward, so that internes will know just how to proceed. Examine the patient. Note his general condition. If he is in a state of shock, treat this condition first. Treatment should be continued by the man on service before any operative interference. The examination should include charts of the blood pressure and pulse rate during the first few hours at least. This record may prove very valuable for comparison with later observations. In fact the outcome of many cases depends on this comparison since it may not prove necessary to proceed further with those patients who show improvement. If there is no improvement, something more must be done.

##### *Neurological Examinations*

This step should include certain definite diagnostic methods but a more or less cursory examination is sufficient. Examine the surface and tendon reflexes thoroughly. Palpate the skull for signs of injury. Then watch for signs of deep trauma by examination of the cranial nerves. Eye grounds often give very definite information. Evidence of engorgement or retinal hemorrhage may appear a few hours after admission. This condition is always a danger sign and indicates intracranial pressure. Fixed pupils also indicate grave prognosis. The presence of nystagmus is not of any particular significance in unconscious or semi-conscious patients.

##### *Lumbar Puncture*

This should not be done as a rule by the house officer before his chief arrives, as in the more serious cases the outcome may be fatal. It is a valuable aid which should be given when indicated, and then with careful pressure readings. Fluid must be gradually withdrawn, 15 cc. every five or six minutes.

##### *Scalp Wounds*

If the patient presents scalp wounds, these should receive attention at the time of entrance. Should surgical procedure be necessary for the relief of intracranial pressure, it may be advisable to wait until after this operation.

##### *Preparation of Head*

Removal of hair from the scalp enables one to make a more complete investigation. A clipper readily removes the hair and should be used in the male cases. In the female cases, one should try to preserve rather than remove all the hair which loss would, perhaps, cause the patient much annoyance.

##### *X-Ray Examinations*

Patients should not be subjected to any examinations not absolutely necessary at time of entrance. Treat the condition of shock and if conditions warrant, take X-Rays about 24 hours later. The following case was reported to illustrate the importance of the X-Ray examination.

A patient was admitted to the Massachusetts Gen-

eral Hospital. X-Rays were taken which were reported negative. The clinical findings were those of a compressed fracture. After further examination, the X-Ray information showed that the apparent depression was hematoma.

##### *Importance of Skull Injuries*

Patients often appear with multiple injuries in which cases consideration of the brain condition should always take precedence.

##### *Illustration*

A boy about two years old fell down an elevator well. He arrived at the hospital unconscious and in a state of shock. He had a fracture of the thigh which was reduced sometime after his arrival. The surgeon on his morning visit was told that the patient slept all night. On returning to the ward several hours later the patient was apparently still sleeping, and at 2 P. M. he died from intracranial pressure.

Patients with head injuries should be put to bed and waked up about every two hours so that a state of coma will not develop.

##### *Some Facts Worthy of Repetition*

The most important factor in head injuries is injury to the brain or vessels in vicinity. A ruptured vessel means hemorrhage, then intracranial pressure. First combat this increase in intracranial pressure by careful and guarded use of lumbar puncture and by those drugs that tend to absorb spinal fluid. The greatest number of patients will fall into the class treated by lumbar puncture, the next into the class treated by magnesium sulphate solution by rectum and the smallest class by decompression.

##### *Mild Cases*

Treat mild cases of concussion by rest in bed and mag. sulph. sol. The patient must be watched as carefully as in the more severe types since symptoms may not appear for several weeks.

##### *Severe Cases*

In the more severe type (that is, when the patient is unconscious or semi-conscious, thrashing about with a slow or an irregular pulse) proceed with lumbar puncture if the patient has not improved in an hour or so. The fluid should be gradually withdrawn, repeating daily for four days if necessary.

##### *Grave Cases*

In the third type of case, where the patient remains unconscious regardless of withdrawal of spinal fluid, a sub-temporal decompression is indicated. Exploration of the sub-temporal space is not a wise operation. It is far safer to depend on repeated lumbar punctures.

##### *History*

The patient is often unable to give much history. Attempts should be made to obtain information from friends or relatives. The patient is, perhaps, alcoholic or he may be subject to fits, and a good history may make much difference in one's conclusions. Conclusions may be materially changed if one knows just the nature of the injury and the relation of the patient to the application of the blow. Sometimes we see unconscious patients whose history shows that the head was not struck. In these cases the history is of greatest importance. Keep in mind the fact that it is not necessary that the head be struck to produce a tear of vessel in the skull.

##### *Spine Injuries*

Spine injuries with neurological signs should be treated as emergencies. Operate at once or not at all. Twenty-four to thirty-six hours is the time limit for the delay of operation as the cord becomes permanently damaged after this time. Examination of

spinal fluid showing indication of block is definite evidence of cord compression. It may be due to a blood clot or to depressed laminae. Fracture dislocation of the neck should be treated by traction and manipulation supplied immediately after the shock has disappeared. A plaster helmet should then be adjusted.

#### Paralyzed Patients

Those patients that are paralyzed must not be catheterized. Let the bladder distend rather than run the chance of infection. It usually rids itself of urine by dribbling.

#### Bed Sores

Appear from twelve hours depending on the laxity of nursing care. A box filled with saw-dust seems to meet the needs of these patients. The saw-dust is soft, so that all parts of the body can be easily reached. As it becomes soiled, it can be readily replaced.

M. N. TENNIS, *Secretary of Staff.*

#### THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held a regular meeting and dinner at Beverly Hospital on December 7 at 5 P. M. The following clinical program was presented:

5:00 P. M. Exhibits in X-Ray, Laboratories, Occupational Therapy Department and Record Room.

#### 5:30 P. M. CLINICS

1. Pernicious Anemia by  
Dr. Clifton L. Buck (10 minutes)  
Dr. Albert F. Parkhurst (10 minutes)  
Dr. Frederick Baldwin (10 minutes)
2. Discussion of The Orr Method of Dressings by  
Dr. Peer P. Johnson (15 minutes)
3. Group of Traumatic Backs with Especial Reference to Diagnosis by  
Dr. John D. Adams (30 minutes)
4. Importance of Sinus Infection to the General Practitioner by  
Dr. Thomas Odeneal (10 minutes)
5. Mastoiditis following Fractured Skull by  
Dr. William Hayes (5 minutes)  
Dr. Henry Tolman (5 minutes)

At the close of the dinner the Society listened to an exposition of the malpractice insurance situation by Mr. George H. Crosbie, Massachusetts Agent for the United States Fidelity and Guaranty Company of Baltimore, Maryland. His remarks were followed by many questions and by a unanimous vote the Society went upon record as approving the attitude of and policy issued by this company as well as its appreciation of Mr. Crosbie personally.

The Society then welcomed Dr. P. E. Truesdale of Fall River, who spoke upon "Modern Trends of Medical Practice". Discussion by Dr. P. P. Johnson of Beverly. Attendance 70.

WILLIAM T. HOPKINS, *Reporter.*

#### THE MASSACHUSETTS PSYCHIATRIC SOCIETY

About one hundred twenty-five members and guests attended the meeting of the Massachusetts Psychiatric Society held at the Boston Psychopathic Hospital, December 9, 1927. The speaker of the evening was Dr. Adolf Meyer of Baltimore, Professor of Psychiatry in the Johns Hopkins Medical School, and President of the American Psychiatric Association, whose topic was "Genetic-Dynamic versus Nosologic Teaching in Psychiatry".

The speaker dealt with his method of teaching psychiatry, a method which attempts to coordinate and link this subject with the rest of the curriculum

rather than to present it as a detached and isolated specialty. In the first year, for instance, a fundamental course in "psycho-biology" is given, comparable on the physical side to physiology. The second year general methods of examination are taken up, followed in the third year by demonstrations and discussions of cases and by out-patient department work. The fourth year course consists largely in intensive individual study of cases with the preparation of case reports.

The speaker also took up in considerable detail his concept of mental disease. He has discarded to a large extent the notion of clean-cut groups in favor of reaction-types, emphasizing always the individual's problems. To his mind, the establishment of definite groups encourages the consideration of certain detached mental symptoms, with the result that their significance may be missed and the totality overlooked. To him, the patient is "an experiment of Nature", requiring study as an individual. His outline for case study follows:

General Behavior and Mood  
Content and Form Problems  
Type and Depth of Content Disorders  
Course  
Causal Factors and Process.

Under the final heading, due weight is to be given to physical and constitutional factors.

The address was a stimulating one, and the privilege of hearing Dr. Meyer was appreciated by all present.

WINFRED OVERHOLSER, M.D.

#### WORCESTER DISTRICT MEDICAL SOCIETY

The December meeting was held at the Worcester Chamber of Commerce December 14, 1927.

6:00 P. M.—Business meeting.  
6:30 P. M.—Supper at the Bancroft Hotel.  
8:00 P. M.—"Stone in the Kidney," Arthur M. Chute, M.D., Boston, Mass.  
9:00 P. M.—Production of Certified Milk (two-reel film), Mr. McClellan, Walker Gordon Laboratory Company, Boston, Mass.

Mr. George H. Crosbie of the United States Fidelity and Guaranty Company gave a short talk on the malpractice situation. The society voted to endorse the United States Fidelity and Guaranty Company.

About fifty were present at the supper and about ninety heard Dr. Chute's paper.

DR. CHARLES A. SPARROW, *Secretary.*  
DR. F. H. WASHBURN, *President.*

#### THE PERSONAL PROBLEMS OF STORE WORKERS

A course of lectures on "The Personal Problems of Store Workers," to commence in January, 1928, has been arranged through the cooperation of the Retail Trade Board of Boston and this society. This course will consist of six lectures given by leading authorities in psychiatry and psychology, and of three round-table discussions under the direction of Dr. Henry B. Elkind, Medical Director of the Massachusetts Society for Mental Hygiene. The lectures will be open to any business executive, but the round tables will be limited to those executives who handle personnel and training.

The speakers will be:

Dr. C. Macfie Campbell, Director of the Boston Psychopathic Hospital, and President of the Massachusetts Society for Mental Hygiene.

F. L. Wells, Ph.D., Chief of the Psychological Laboratory, Boston Psychopathic Hospital.

Dr. Abraham Myerson, Professor of Neurology, Tufts College Medical School.

Johnson O'Connor, General Electric Company, West Lynn.

Dr. E. Stanley Abbot, Member of the Executive

Committee, Massachusetts Society for Mental Hygiene.

Elton Mayo, Associate Professor of Industrial Research, Harvard Graduate School of Business Administration.—*Bulletin of the Massachusetts Society for Mental Hygiene.*

#### TRUDEAU SOCIETY OF BOSTON

The next meeting of the Trudeau Society of Boston will be held on Tuesday evening, January 3, 1928, at 8:15 p. m., in Sprague Hall, Boston Medical Library, 8 The Fenway, Boston.

The speaker will be Dr. George T. O'Donnell; subject: "The Tuberculosis Program of Boston." Dr. Francis X. Mahoney, Dr. Sumner H. Remick, Dr. Edward O. Otis, Dr. Vincent Y. Bowditch, Dr. John B. Hawes, 2nd, and Dr. Cleaveland Floyd have been asked to lead in the discussion.

Physicians, medical students, and nurses are cordially invited to attend this meeting.

RANDALL CLIFFORD, *Secretary.*

#### SUFFOLK DISTRICT MEDICAL SOCIETY

WILL MEET AT THE

BOSTON CITY HOSPITAL, CHEEVER AMPHITHEATRE,  
WEDNESDAY, DECEMBER 28, 1927, AT 8:15 P. M.

##### Medical Section—Program of Clinic

8:15-8:25—Plans and Progress of Hospital. Dr. John J. Dowling.

8:25-8:35—Preventive Inoculation Among Nurses at Boston City Hospital. Dr. George P. Sanborn.

8:35-8:45—(a) Teratoma Cyst of Buttocks. Dr. Martin J. English.

(b) Gangrene of Leg (in 15 months child) associated with Heart Lesion. Dr. Otto J. Hermann.

8:45-8:55—Chronic Laryngeal Stenosis. Dr. Edwin H. Place.

8:55-9:05—Injuries of the Ankle. Dr. Frederic J. Cotton.

9:05-9:15—The Effects of Tonsillectomy on the Attack of Acute Rheumatic Fever. Dr. William H. Robey.

9:15-9:25—Suppurative Diseases of the Lung. Dr. Horace Binney.

9:25-9:35—The Thebesian System of the Heart and Its Relation to Angina Pectoris and Coronary Thrombosis. Dr. Joseph T. Wear.

9:35-9:45—(a) Presentation of case of Thromboangitis obliterans complicating miscarriage. Dr. Nathaniel R. Mason.

(b) Presentation of case of Malignant Disease of Vulva.

Refreshments in the Hospital library after the meeting.

GEORGE P. DENNY, M.D., *Secretary.*  
REGINALD FITZ, M.D., *Chairman.*

#### SOCIETY MEETINGS

December 23—New England Pediatric Society. Detailed notice appears on page 1159, issue of December 15.

January 3—Trudeau Society meeting. Detailed notice appears elsewhere on this page.

January 12—Staff clinical meeting of the Massachusetts General Hospital. For detailed notice see page 1200, this issue.

January, February, March and April, 1928—Last Saturday at 11 A. M. Cheever Amphitheatre, Staff Clinical Meetings at Boston City Hospital.

#### DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 4, 1928 (Wednesday)—Semi-annual meeting at the Centre Church vestries, Main Street, Haverhill, at 12:30 P. M.

May 2, 1928 (Wednesday)—Annual meeting at 12:30 P. M.

May 3, 1928 (Thursday)—Censors meet for examination of candidates at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. Candidates should apply to the Secretary.

J. Forrest Burnham, M.D., 567 Haverhill Street, Lawrence, at least one week prior.

#### Essex South District Medical Society

December 7 (Wednesday)—Beverly Hospital. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. P. E. Truesdale, Fall River, "Modern Trends of Medical Practice."

Discussion by Drs. P. P. Johnson and C. H. Phillips of Beverly, 10 minutes each, and from the floor.

January 4, 1928 (Wednesday)—Deer Cove Inn, Swampscott. Dinner at 7 P. M.

Dr. Frank Lahey, "Differential Points of Importance to the General Practitioner in Surgical Diagnosis."

Discussion by Drs. Walter Phippen of Salem and N. P. Breed of Lynn, 10 minutes each, and from the floor.

February 1 (Wednesday)—Council meeting, Boston.

February 8 (Wednesday)—Danvers State Hospital. Clinic at 4 P. M. Buffet supper at 6 P. M., followed by

Dr. Abraham Myerson, "Some Aspects of Mental Hygiene."

Discussion by Drs. W. F. Wood of Hathorne and G. M. Kline of Beverly, 10 minutes each, and from the floor.

March 7 (Wednesday)—Lynn Hospital. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Henry R. Viets, "The Acute Infections of the Nervous System," with lantern slides and moving pictures.

Discussion by Drs. W. V. McDermott of Salem and J. W. Trask of Lynn, 10 minutes each, and from the floor.

April 11 (Wednesday)—Essex Sanatorium, Middleton. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Raymond S. Titus, "Obstetrical Emergencies."

Discussion by Drs. J. J. Egan of Gloucester and A. T. Hawes of Lynn, 10 minutes each, and from the floor.

May 3 (Thursday)—Censors meet at Salem Hospital for the examination of candidates at 3:30 P. M. Candidates should apply to the Secretary, Dr. R. E. Stone, Beverly, at least one week prior.

May 8 (Tuesday)—Annual meeting. Place and speaker to be announced.

#### Suffolk District Medical Society

Combined meetings of the Suffolk District Medical Society and the Boston Medical Library will be held at the Boston Medical Library, 8 The Fenway, at 8:15 P. M., as follows:

December 28—Medical Section. "Functions and Organization of the Boston City Hospital."

January 25, 1928—General meeting in association with the Boston Medical Library.

Dr. George W. Crile, Lakeside Clinic, Cleveland, Ohio. Title to be announced later.

February 29—Surgical Section. Subject to be announced later.

March 28—Medical Section. "The Use and Misuse of Vaccines." Dr. Hans Zinsser, Dr. Francis M. Rackemann, Dr. Charles H. Lawrence.

April 25—Annual meeting. Election of officers. Paper of the evening to be announced later.

The medical profession is cordially invited to attend these meetings.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

#### BOOK REVIEWS

*Surgical Diseases of the Gall-Bladder, Liver and Pancreas and Their Treatment.* MOSES BEHREND, A.M., M.D., F.A.C.S. Pp. 278. Philadelphia: F. A. Davis Company, 1927.

Chapters on the normal embryology and anatomy of the gall-bladder, liver and pancreas are followed by a detailed description with illustrations of the many structural anomalies which may be encountered. A short uninspired chapter on physiology is followed by sections dealing with pathology, symptomatology and surgical treatment. The final chapter is devoted to

an account of the results of the ligation of the hepatic artery in animals.

The book is a conventional approach to the subject from an anatomico-pathological viewpoint, and consequently fails to present the dynamic conceptions which recent investigations in experimental pathology and physiology have created.

*Manual of Diseases of the Eye.* By C. H. MAY.  
Twelfth edition, revised. Published by William Wood & Company of New York.

This is the twelfth edition of Mr. May's excellent manual. The book has been completely revised and brought up to date in every way. It is a small manual of diseases of the eyes especially designed for students and general practitioners. It is very well written in a clear simple style and the material is presented in such a way that it is easily understood. Unessential and confusing details have been wisely omitted. It is the ideal book for students and general practitioner.

*Clinical Case Taking.* Supplement to Methods in Medicine. By GEORGE R. HERRMANN, Assistant Professor of Medicine, Tulane University. Pp. 90. St. Louis: The C. V. Mosby Company, 1927.

A complete manual presented in outline form for guidance in clinical history-taking and physical examination. Instruction is also given on how to arrange the material in a written record of the case in a logical and natural sequence. To follow this guide would be an excellent discipline for the student embarking in clinical case taking.

*Cystoscopy.* By JAS. B. MACALPINE, F.R.C.S. (Eng.), Honorary Surgeon and Surgeon in charge of the Genito-Urinary Department, Salford Royal Hospital, Manchester. Price \$7.00. 284 pages. New York: William Wood and Company, 1927.

This is an excellent book devoted entirely to cystoscopy. It contains an historical review of the development and optics of the cystoscope. The instructions for performing cystoscopy are detailed, clear and complete.

There are chapters on tuberculosis of the urinary tract, tumors of the bladder, calculus, prostatic disease, diseases of the kidney, renal function tests, and pyelography.

The text is illustrated by 181 figures and 12 colored plates which are excellent.

The author gives modern methods of examination in a clear and pleasing way.

To the practitioner interested in genito-urinary surgery, or one about to become familiar with cystoscopy, the book is of considerable value.

*Convalescence, Historical and Practical.* By JOHN BRYANT, M.D.

A noteworthy book has just been published, "Convalescence, Historical and Practical," by Dr. John Bryant, formerly Major Bryant of the United States Army. It is so far as I know the only book bearing the title "Convalescence", though this is such an important branch of the care of the sick; many and valuable articles have been written upon this subject, but hidden in journals or published as special articles by those in charge of the work. In this book we find a résumé of all the work done in this branch of medicine in this country and in Europe. The scope of the book is well described by its title, "Convalescence, Historical and Practical".

The historical part of the book should be read by all who are interested in medical history, the care of the sick or the economic management of the sick as the problem is presented to those in charge of our great hospitals.

The first convalescent hospitals were founded in France in connection with the hospitals Hôtel-Dieu and La Charité towards the end of the seventeenth century. In 1781 a royal ordinance indicated the reasons for the establishment of hospitals for convalescents in association with the military hospitals of the time. One powerful argument for the maintenance of such hospitals was the great mortality in the hospitals for acute illness at that time, though even then attention was drawn forcibly to the value to the sick of residence in quiet, healthy places for those who had been acutely ill, in addition to the economy of separate institutions for convalescents. Later under Napoleon the third the great hospital at Vincennes was founded in 1855. This hospital soon had accommodations for 522 convalescent patients. At Vincennes and later at Vesinet elaborate plans were made as to providing fresh air, proper simple food, rest and recreation for the patients.

It is to most of us surprising to read of the "Houses of Rest" recently established in Russia where the government is apparently in such a chaotic state. In England are many homes or small hospitals for convalescents, but none on a scale comparable with the French hospitals.

As recently as 1915 the Winifred Masterson Burke Relief Foundation established at White Plains, New York, a wonderful hospital with accommodations for three hundred patients. Dr. Brush is at the head of this vast enterprise and from him comes what we have learned as to the management of such hospitals for convalescents. The Cleveland Hospital and Health Survey is quoted at great length by Dr. Bryant. It is a scientific study of the practical cure of the sick based upon the study of all the hospitals of the city with detailed deductions as to the care of convalescents. In this as in all similar studies the conclusion is formed that convalescent beds should exist in the ratio of one to ten of the beds for the acutely sick; also that convalescence requires at least as long a time as the acute illness demanded.

Dr. Bryant kindly draws a veil over the accommodations for convalescents in our vicinity.

The practical part of the book should be read by every man who has at heart the interest of the individual patient, or who from an economic point of view is a student in the questions of the large sums expended in caring for the sick. Dr. Bryant's wide experience in the convalescent camps of the United States Army and his special work at the Walter Reed General Hospital give his opinions great weight. Dr. Bryant urges especially the necessity of prolonged care of the convalescent whether the primary disease be a surgical operation or a medical disease before one can take up his usual activities. He further makes the observation that there is no material difference in the time required for proper convalescence whether the case be a surgical or a medical case. He

proves by his own statistics and the statistics of the convalescent camps in France the practical wisdom of his views. A most interesting phase of Dr. Bryant's work is his experience with academic work for convalescents. This work rather than purely physical exercises or manual labor interested his men more, and further by the education acquired enabled the men to take a better position in life after discharge from the army.

Several factors are prominently forced upon us in "Convalescence".

(1) The need of a sufficient number of beds for convalescents.

(2) The importance of a proper diet with a minimum amount of a heavy meat diet. His so-called "Soft Diet" won favor with the patients.

(3) Graduated exercises, especially with slow movements.

(4) Occupational therapy with special reference to the value of academical occupational work.

The book is discouraging in that it brings to every honest man the conviction that in hospital practise and no less in private practise he has not done his best for his convalescent patients, even if he has neglected them.

No one can read this book without thinking of Dr. Francis W. Peabody's remarkable essay on the Care of the Patient and it is a pleasure to note that Dr. Bryant ends his book by a quotation from Dr. Peabody: "The secret of the care of the patient is in caring for the patient."

**Urography.** By WILLIAM F. BRAASCH, M.D., Head of Section of Urology, Mayo Clinic; Professor of Urology, Graduate School of Medicine, University of Minnesota. Second edition, Revised and Enlarged. Octavo of 480 pages, illustrated with 759 Roentgenograms. Philadelphia and London: W. B. Saunders Company. 1927. Cloth, \$13.00 net.

In this revised and enlarged edition of his monograph on Urography, Braasch has said about all that can be said on the subject. Beginning with the history of this method of diagnosis, he goes on to the technic of its employment. He then considers pyelography in normal kidneys, and shows many pyelograms illustrative of normal variations. Following chapters are devoted to the consideration of the various renal and ureteral lesions as shown in urograms; the last chapters deal with cystography and urethrography.

Each chapter begins with general remarks on the diagnostic features of the lesion under discussion. Braasch then discusses briefly the salient points in each of the numerous illustrations.

The wealth of material from which Braasch has culled the 759 roentgenograms and the extensive experience which he has had as urologist of the Mayo Clinic have enabled him to produce a monograph which is not only inclusive in its extent, but moderate and well-balanced in its conclusions.

We noted only one illustration—No. 725—which was upside down; aside from this, the publishers' work has been well done.

"Urography" is a valuable book for roentgenologists and urologists, and can be read by all physicians with profit.

**Nasal Neurology, Headaches and Eye Disorders.** By GREENFIELD SLUDER, M.D., F.A.C.S. St. Louis: C. V. Mosby Company. 1927. 428 pages. Price, \$11.50.

Dr. Sluder's previous monograph, published in 1918, "Concerning Some Headaches and Eye Disorders of Nasal Origin," contained many chapters on the relation of the nervous system to rhinology, and he pointed out at that time the importance of the special part played by the involuntary nervous system in causing headaches and head pain. The involuntary nervous system appears more superficially in the nose than

anywhere else in the body and is, therefore, likely to be involved in disease of the nose and the accessory sinuses. At that time, Sluder explained his conception of a syndrome of nasal (sphenopalatine-Meckel's) ganglion neurosis and gave it the picturesque nomenclature of "lower half headache." In his present work he elaborates his ideas on the lesions of the sphenopalatine ganglion, ideas which he first formulated in 1908, in a chapter of fifty pages, covering the subject in great detail except, unfortunately, the gross or microscopic pathology. The lack of a definite ocular and demonstrable lesion is the weak point in his argument for the syndrome, for he presents sufficient clinical evidence to partly justify his claim. Pathological material, he finds, is almost impossible to obtain and because of its lack, he presents the subject on the basis of "nasal neurology", hoping in this way to attract a wider audience who, becoming interested, will cooperate with him "in obscure neurological cases in order to obtain post-mortem material in which the life history of the individual is definitely known." One cannot help but be in sympathy with the author in his endeavor and it is hoped that material, suitable for examination, may reach him in good time. Meanwhile, the syndrome, as set up by Sluder, must be accepted in a provisional manner.

The book also covers the subjects of vacuum frontal headaches, anterior ethmoidal neuralgia, sphenoiditis, orbital abscess and items of rhinological interest such as the author's antrum technique and other operative procedures. It is fully illustrated with many original drawings and contains an extensive list of references and a good index; there are many typographical errors. About one-third of the book is given over to case histories, badly placed at the end of the book and not in the running text where they would be most useful. Among them, however, one finds reports of many unusual cases.

Dr. Sluder is working in a difficult field, still, in spite of his efforts, obscure and confused. He, at least, has given us a basis to work upon and has clearly shown that "lower half headache" may be stopped in one type of lesion by coagulation of the nasal ganglion and in another by intrasphenoidal application of cocaine or similar remedies. Some cases are easily cured by such simple measures; others have only transitory benefit. There is still much to be explained, not only about the clinical manifestations, but about the anatomy and pathology of the nasal ganglion. Dr. Sluder's clear presentation of his personal experiences in rhinology should stimulate others to investigate and elucidate similar problems.

**Modern Aspects of the Diagnosis, Classification and Treatment of Tuberculosis.** By J. ARTHUR MYERS, M.D. Williams & Wilkins Company, Baltimore, Md. Price, \$3.75.

The first thing which recommends this book to the reader is the fact that there is an introduction by Dr. David A. Stewart of Manitoba. This in itself speaks volumes in its favor. There are 270 pages, 25 chapters, and an index. The book is divided into three parts: Part I, General Consideration of the Subject; Part II, Diagnosis and Classification; Part III, Healing, Prognosis and Prevention.

The first five chapters comprising Part I contain the conventional facts and figures which one would expect to find in dealing with the history and nature of the tubercle bacillus; Part II in eight chapters takes up the diagnosis, history, symptoms and modes of onset of clinical tuberculosis, physical examination and that by x-ray and laboratory, diagnosis in infancy and childhood and classification.

I am very much pleased to see in Chapter VII the amount of space devoted to history and history taking in the diagnosis of tuberculosis, the detailed discussion of the value of various symptoms, etc. This is a point often neglected by the student or practitioner, who is usually jumping for his stethoscope far too

early in the process. His chapter on the x-ray examination is sane and sound. Part III in twelve chapters takes up the general management of tuberculous patients, with chapters devoted to rest, diet, general medical and nursing supervision, air, exercise, heliotherapy, drugs, surgery. Under heliotherapy I am very glad to note that he emphasizes the value of actual sunlight treatment as compared with artificial sunlight. The position which he takes in regard to this is sound.

There are numerous x-ray plates, diagrams and photographs. On the whole I look upon this book as one of the very best that I have ever seen on this subject and would like to see it widely read by students and general practitioners. Chapter V alone on diagnostic points if read carefully and digested would do away with many errors in diagnosis and subsequent tragedies which are occurring every day in the field of tuberculosis.

*Treatment of Venereal Disease in General Practice.*  
E. T. BURKE, D.S.O., M.B., Ch.B. (Glas.) Oxford University Press. 1927.

The introduction states that the book is written to guide the general practitioner in giving simple, thorough, and safe treatments to patients with syphilis and gonorrhoea, since the majority of syphilitides come first to the general practitioner who, if he attempts to treat them at all, must be able to do it adequately. The procedures described are considered "irreducible minimums" which are capable of being carried out by any one in general practice.

In attempting to simplify treatment there is a question whether it may not have been carried a little too far, for instance the course of treatment laid out for a patient with primary syphilis on whom the diagnosis has been made by dark field whose Wassermann Reaction has not yet become positive consists of a total of 16 injections of arsenic and 8 of bismuth; if the blood Wassermann Reaction and cerebrospinal fluid are negative after this course, one is advised to discontinue treatment and to keep the patient under prolonged observation. In secondary syphilis a total of 40 weeks' treatment is advised, to be discontinued under the same provisions of observation if the tests become negative after the course.

Unquestionably this treatment is adequate for a large proportion of patients, but there is a definite proportion whose serology will again become positive after a period of negativity, in which case it seems to be much more difficult to cure the patient than if a longer initial course had been given.

The author strongly recommends that mercury be entirely discarded in favor of bismuth. While bismuth has now been definitely accorded a very important place in the treatment of syphilis, it is a serious question whether it is wise as yet to eliminate mercury in the average case. The patient who does not tolerate arsenic well should certainly be allowed mercury as well as bismuth.

The book is short, concise, and readable; on the whole it is well written and should be a great help to the type of practitioner for whom it is written.

*Collected Addresses and Laboratory Studies of the London School of Hygiene and Tropical Medicine.*  
Vol. III, 1926-27. Compiled by R. T. LEIPER.

This volume contains four addresses by Sir Andrew Balfour, director of the school, and fifty-four papers representing laboratory studies all of which were published during the academic year ending July 31, 1927.

Among the addresses that entitled "Some Tropical Lacunae" is particularly stimulating in that it points to many of the more important deficiencies in present knowledge of tropical disease. Among the diseases discussed are malaria, typhus fever, pellagra and sprue.

The paper likely to arouse the greatest general

interest is that entitled "A Study of Sprue and Addisonian Anemia" by Newham, Morris, and Manson-Bahr. Among their conclusions they say that "sprue and Addisonian anemia are two distinct entities; though having several features in common we think they are produced by two definite and distinct etiological agents." Sprue is considered to be "definitely a disease of the tropics, in some way connected with exposure of susceptible individuals to a condition or conditions inseparable from life in a tropical climate." In another paper Morris reports the results of "Some Observations on Urobilin Output in Sprue."

Many of the other papers will interest particularly the specialist in helminthology or protozoology.

*Food and the Principles of Dietetics.* Sixth Edition.  
ROBERT HUTCHISON. William Wood & Company, New York. \$5.00.

This book of thirty chapters is largely made up of a description of the chemical composition, digestibility, and nutritive values of food and drink. A few chapters are devoted to such topics as the amount of food required in health, the feeding in infancy and in childhood, the principles of feeding in disease, and some dietetic cures and systems. Relatively little consideration is given to the vitamins, the principles of treating rickets are condensed into half a page, and beriberi and pellagra as nutritional disorders are alluded to in a few lines. The dietetic treatment of anemia is not described at all. Few of the references to publications are within ten years and those within five years are rare. The paper and the printing of the book are not good.

*International Clinics, 37th Series, Volume 3.* September, 1927. J. B. LIPPINCOTT.

This issue contains an excellent collection of articles on diversified subjects with a strong leaning toward the clinical aspect of diseases of various organs. Balance is created by the introduction of historical features and articles on hygiene and Public Health. On the basis of 100 cases, Steel advocates the sodium citrate method of treatment of thromboangiitis obliterans in a well illustrated article. In spite of this formidable evidence this mode of treatment is still generally viewed with skepticism. Disease of the gall-bladder is covered in an excellent albeit somewhat repetitious article. In the course of the discussion the authors make the common error of regarding Buerger's disease as arterio-sclerosis of the tibial artery.

Apparently the liver diet has failed at this late date to make sufficient impression in the treatment of pernicious anemia in German clinics. Nonne has had no experience with it despite his contact with numerous cases of pernicious anemia, as brought out in his keen discussion of anemic spinal diseases. He is the only non-American contributor. One would like to see a little more of an international flavor in these clinics.

*Demonstration of Physical Signs in Clinical Surgery.*  
By HAMILTON BAILEY, F.R.C.S. New York: William Wood & Co. 217 pages.

This remarkable volume was probably inspired by the growing tendency to rely too largely upon laboratory aids in diagnosis to the neglect of the examiner's own senses. Every detail of the physical examination of surgical conditions is elucidated and made more clear by the generous use of excellent illustrations. Innumerable little refinements and additions to the technic of physical diagnosis are given which should enable one to reach a correct decision without further assistance in the great majority of cases. Perusal of this book should prove of distinct value to every one who has occasion to make a surgical diagnosis.